



REVERSE LOGISTICS: HAS THE IMPLEMENTATION OF REVERSE LOGISTICS
MET THE OBJECTIVES OF AIR MOBILITY COMMAND?

GRADUATE RESEARCH PROJECT

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Abstract

The concept of reverse logistics is an important part of any supply chain in which the military participates. Air Mobility Command (AMC) plays an integral role in this process by providing transportation assets for support. This research paper represents an in-depth look at the AMC reverse logistics process to see if its implementation is meeting its intended objectives. Specifically, it focuses on what the goals and objectives of AMC's reverse logistics program are, and in what situations they fell short of their intentions. It also addresses improvement areas by applying two civilian models to the program.

The researched areas revealed the AMC reverse logistics process has not met its objectives for several reasons. Internally, funding and software issues have halted the program. Externally, the non-inclusion of other armed services into the initial strategy has not given the program the correct environment in which it is supposed to function. The whole idea of the Strategic Distribution Management Initiative and the transformation movement of the logistics world is to operate under one standardized and common supply chain which will allow joint logistics movement in both peace and war. AMC's program, while supporting certain Air Force assets, has not expanded its scope to incorporate the entire DoD.

The AMC reverse logistics program has limited written guidance and AMC is facing issues right now which are hindering its progress. By reviewing and analyzing the data, weaknesses of the program have been identified for future process refinement.

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I. INTRODUCTION

OVERVIEW

“Transportation costs are expensive, and they are expenditures you can not recoup. With this new, centralized distribution system we’re creating, not only will there be a reduction in spending in terms of transportation costs, but we’ll also be saving the capacity in the airlift or sealift process.”

Patricia M. Young, Deputy Director for
Strategies and Policy, United States
Transportation Command (November 2003)

The concept of reverse logistics is an important part of any supply chain in which the military participates. Air Mobility Command (AMC) plays an integral role in this process by providing transportation assets for support. Like any logistics endeavor, process evaluation identifies both strong and weak practices. This paper represents an in-depth look at the AMC reverse logistics process to see if its implementation is meeting its intended objectives. Specifically, it focuses on what the goals and objectives of AMC’s reverse logistics program are, and in what situations it fell short of its intentions. It also addresses improvement areas by applying two civilian models to the program. These underlying investigative questions provide a framework for the research area and are the guiding basis for the rest of the paper.

The method and operational art of reverse logistics is gaining steam, not only in corporate America, but in the United States Armed Forces as well. The term reverse

logistics can mean many things to many people depending upon who you are talking to and in what context. There is no one standardized definition in the civilian community or the armed forces that can satisfy what exactly encompasses the term of reverse logistics. The Council of Logistics Management (CLM) currently defines logistics as “that part of supply chain management that plans, implements, and controls the efficient, effective forward and reverse flow and storage of goods, services, and related information between the point of origin and the point of consumption in order to meet customers’ requirements.” Only four years ago in 2000, the CLM defined logistics as “the process of planning, implementing, and controlling the efficient, cost effective flow of raw materials, in-process inventory, finished goods and related information from the point of origin to the point of consumption for the purpose of conforming to customer requirements” (Council of Logistics Management website, Oct 2003). The two definitions are very similar with one distinct difference--the point of forward *and* reverse flow. The CLM is now defining reverse logistics as its own entity, stating it “encompasses the logistics management skills and activities involved in reducing, managing, and disposing of wastes. It includes reverse distribution, which is the process by which a company collects its used, damaged or outdated products or packaging from end-users” (Marketplace Training website, Oct 2003).

Reverse logistics is a relatively new name for an old art in the United States Air Force (USAF). We have essentially been doing many of the tasks associated with reverse logistics but just calling them by different names and processes. Terms like reparable redeployment, retrograde management, and reverse distributions are just a few examples. Headquarters AMC (HQ/AMC) does not have a distinct reverse logistics definition yet,

but is using the United States Transportation Command (USTRANSCOM) definition of “the efficient return of repairable assets to service maintenance depots, and the repair and repositioning of those assets.” Here you can see some similarities to the CLM definitions but with a different focus.

The need for a more streamlined reverse logistics process in AMC was a USTRANSCOM initiative. It went away from the Cold War mentality of massive amounts of parts and supplies stockpiled in prepared locations (mostly overseas) and shifted more towards the expeditionary mindset of a leaner, velocity, and customer focused logistics package. The idea of reverse logistics in AMC evolved from the USTRANSCOM and Defense Logistics Agency’s (DLA) Strategic Distribution Management Initiative (SDMI) which has been in-place for a little more than three years. The SDMI’s main objective is to “create an integrated end-to-end supply chain distribution process further breaking down current functional stovepipes.” The SDMI is the Department of Defense’s (DoD) first attempt to improve the armed services global distribution system to meet the transformation effort and its customer needs. The off-spring of the SDMI was the Strategic Distribution Management Program Management Plan (SD-PMP) which further clarified senior leadership distribution guidance. AMC reverse logistics roots have also been traced to the Logistics Response Time Reduction Initiative. This report, put out by the General Accounting Office (GAO), involves eliminating customer wait times by identifying supply chain inefficiencies and introduces modernized logistical management processes (GAO, August 2003).

It may not be fair to model logistics and imitate corporate America in the United States military (and vice versa) since the goals of the two are relatively different. In the

business world, firms are concerned with making money and maximizing resources. They strive to achieve certain performance levels to attract their clients in hopes of turning a profit. The US military obviously does not have this focus. The military is not geared towards attracting customers and maximizing profit, although the military does have to operate within rigid budget requirements to meet certain levels of performance. These budget and performance requirements look more at minimizing cost to achieve the maximum level of performance. So, even though the goals and end-states are somewhat different, there is similarity in the use of money and how to employ systems which benefit the needs of the firm and its customer or the needs of the military service and that of its warfighters.

There are several schools of thought on how reverse logistics plays into the role of military operations. Commanders at all levels realize without the logistic supply chain, the battle will be lost. But, many are now turning the corner on how the supply chain can work backwards and affect their unit or mission readiness capabilities. With a global operation mindset and in-place air and motor logistical networks, commanders are finding out returning or recycling equipment and supplies is now a reality. What once never took place or took too long to even consider is now moving its way forward in combat support operations. Reverse logistics is fostering this transformation.

There are many variables which go into the umbrella of readiness. Some things which come to mind are training, awareness, equipment, mental and physical preparedness, and skill. Readiness is a tough term to measure since it deals with tangible metrics like how much you have of something, number of trained personnel, or to what level of training they have achieved. But, it also deals with intangible metrics like how

one perceives being ready (physically or mentally), or how personnel will react in a given situation. One person may think they are readily prepared for a mission when they really are not since their training at base X was to an unknowingly unsatisfactory level.

Another person may think they are not readily prepared when really they are since their base Y has trained to a possible higher level or more dynamic breadth of experience. The concept is readiness is often a hard target to measure since not all of its variables are always tangible.

The same can be said for combat capability. Many of its components are measured through hard data such as crew flying hours, combat time, number of bombs, and equipment inventories. But, it too possesses intangible metrics such as practical experience, personal drive, and motivation towards a mission. These intangible metrics don't always show up on paper but do play a major role in defining a person or unit capability and readiness.

If a person does not have the proper piece of equipment at the proper time and in the proper place, then the maximum result, in most cases, will not be achieved. This is the defining point of reverse logistics. If the airman does not have the part to replace, the airplane to fly, the computer to interface, or the gas truck hose to fuel, then we see a reduced state of readiness, however minute it may be. The solution is how to get the part into the maintainer's hand, the plane to the aircrew, the computer to the war fighter or the truck to the fuel pit. Reverse logistics is one way. It will not guarantee 100% results, but it will improve the odds that capability will be increased instead of decreased.

PROBLEM STATEMENT

The importance of any successful business initiative or program is the development of a roadmap to an end-state. Looking at the experiences of other commands and armed services, the USAF has recognized a more efficient and effective transportation supply network is needed to meet its goal of being an agile combat force capable of taking the fight anywhere, anytime, and on our own terms. Military case studies by the RAND Corporation have shown USTRANSCOM, and in particular AMC, can improve its logistical flow in the continental United States (CONUS) and overseas (OCONUS). But, with few case studies to actually examine, AMC is constantly looking at its mobility logistical processes to see if it is projecting its global power in the right continuum.

The business of mobility brings the forward supply chain directly to the warfighter at the correct time and correct place for use or employment. Unfortunately, often the reverse supply chain is overlooked, not planned for, and not used when deploying for aerospace expeditionary force rotations, contingencies, wars, sustainment operations, and humanitarian relief operations. In the past we have seen a misunderstanding of the reverse supply chain which could have had a positive effect on readiness or combat capability. With the USTRANSCOM Strategic Distribution (SD) initiative, AMC is scrutinizing its reverse supply chain to see if it can consolidate and streamline AMC reverse/retrograde activities to meet the needs of the warfighter. The purpose of this research is to look at AMC's reverse logistics function and processes to see if its implementation is meeting the intended objectives. It will also attempt to identify any

reverse logistic shortfalls or deficiencies and offer possible solutions to enhance the AMC reverse logistics program.

RESEARCH OBJECTIVES/QUESTIONS

The research objective of this paper is two fold. First, it takes an in-depth look at AMC's reverse logistics program to see if its implementation meets the objectives of AMC. Although in somewhat of an immature stage, AMC has put money and resources into setting up this program and is now ready to start implementing it. It is also time for AMC to identify any shortfalls which have presented themselves and identify what can be done to refine the reverse process to overcome inefficiencies. This will be done by answering four investigative research questions. The second research objective is to raise awareness of reverse logistics within the DoD and its affiliates. Corporate America has found both monetary and resource value by implementing simple business reverse flow practices. What once was a field that no one paid attention to is now a multi-million dollar venture which has opened up a new world to the reverse supply chain mission. As data is becoming available and research continues, awareness of the reverse flow chain is being validated.

USTRANSCOM and DLA's SD-PMP have set guidelines for the transportation and logistics community on employment of the reverse logistics function within the DoD. Working closely with USTRANSCOM, AMC has forged a new path to turn this vision into a meaningful, useful, and measurable logistics program. To support the overarching research objectives, four supporting investigative questions were studied:

1. What are AMC's reverse logistics goals and objectives?
2. Are the goals and objectives of the AMC reverse logistics program being met?

3. In what situations did the AMC reverse logistics processes not meet their intended objectives and why?
4. Identify situations where implementation of the AMC reverse logistics programs could further help AMC meet its program goals and intentions by applying two corporate business pitfall model constructs to it.

The questions mentioned in the last paragraph were addressed through interviews and correspondence (See APPENDIX 1 – 3) with key leadership officials and senior officer directorates from USTRANSCOM, DLA, and AMC. Several briefings and background papers are also referenced. Additional information was obtained from world-wide base level logistics squadrons to gain insight into how reverse logistic systems are being run to support AMC and USTRANSCOM initiatives. Further discussion of the methodology will be explained in Chapter III, Methodology.

PREVIEW OF REMAINING CHAPTERS

This chapter introduced and defined the initial role of reverse logistics throughout the DoD, DLA, USTRANSCOM, and AMC. It also identified the need for AMC to continue to pursue the SD-PMP on reverse logistics to further streamline its reverse flow process. Chapter II, Literature Review, shows past and current research in the area of reverse logistics and retrograde flow. It provides not only a historical background on AMC's reverse logistics beginnings, but also illustrates other reverse logistics programs within corporate America, the armed forces, and the Air Force. Chapter III, Methodology, continues to break down AMC's reverse processes and describes the research methods used to obtain the data and results. It also discusses constraints and biases which limited the research. Chapter IV, Analysis and Discussion, reviews the data

from the study, compares AMC's program to two civilian pitfall constructs, identifies the importance of the study to the field of reverse logistics, and discusses results posed by the investigative research questions. Chapter V, Conclusions, answers the overarching research question, summarizes the research conclusions, makes recommendations for AMC concerning reverse logistics, and provides further research areas in the field for AMC.

II. LITERATURE REVIEW

The literature review is the foundation for the research into AMC's reverse logistics process. It is divided into three sections. The first section looks at the history and background of reverse logistics in the civilian sector. The second section discusses the origin and presence of reverse logistics in the armed forces. The last section focuses primarily on the history of the AMC reverse logistic program from its inception. The combination of these three areas of the literature review defines the basis for which the research was formulated in Chapter III, Methodology.

REVERSE LOGISTICS DEVELOPMENT AND PRACTICE IN THE CIVILIAN WORLD

“Reverse logistics is ruled by a school of thought called the Tyranny Of the Urgent. Companies take care of things that are most important now. Reverse logistics isn't perceived as important yet.”

Dr. James Stock, author of Development and Implementation of Reverse Logistics Programs

If there were any doubt about the importance and emphasis of the logistics function in corporate America, one would not have to look very far. Logistics and its associated activities accounted for 10.7%, or approximately \$862 billion, of the United States gross domestic product (GDP) in 1997 alone (Rogers & Tibben-Lembke, 1999). The actual dollar amount associated with reverse logistics during this time is a tough number to pinpoint though, since many companies have different activities under their reverse logistics process. What one company classifies in the reverse chain as a process may translate to another company as a transportation or material waste cost. This is why

having a standard definition of reverse logistics is so imperative to the field. In some companies, the handling of the reverse flow is internal to its supply chain while other firms choose not to concentrate or bother with this process. Many of those companies look to a third party or outsourcing company to handle their reverse logistics requirements if they even address them at all. Whatever the case may be, it has been estimated the average firm's reverse logistics functions account for about 4% of the companies total logistics cost (Rogers & Tibben-Lembke, 1999).

Defining Reverse Logistics

Dr. Dale Rogers and Dr. Ronald Tibben-Lembke, in their book “Going Backwards: Reverse Logistics Trends and Practices” define reverse logistics as “the process of planning, implementing, and controlling the efficient, cost-effective flow of raw materials, in-process inventory, finished goods, and related information from the point of consumption to the point of origin for the purpose of recapturing value or proper disposal.” They go on to include other activities such as “processing return merchandise due to damage, seasonal inventory, restock, salvage, recalls, excess inventory, recycling programs, hazardous material programs, obsolete equipment disposition, and asset recovery” (Rogers & Tibben-Lembke, 1999). In their definition, Rogers and Tibben-Lembke mention several processes as a boundary to reverse logistics but keep the definition vague. By using terms like “related information” the meaning is open to individual interpretation as to what those related information processes really are.

Dr. James R. Stock, Professor of Marketing and Logistics at the University of Southern Florida, defines reverse logistics as “a broad concept, encompassing many activities within, and outside of logistics. It is the term most often used to refer to the

role of logistics in product returns, source reduction, recycling, material substitution, reuse of material, waste disposal, and refurbishing, repair and remanufacturing” (Stock, 2001). In this definition, we see a more refined list of reverse logistics activities which narrows the subject, but expands the scope. His sweeping phrase of activities “within, and outside of logistics” broadens the range of roles not traditionally associated with the logistics function.

Another definition of reverse logistics comes from the Reverse Logistics Executive Council (RLEC), a non-profit organization dedicated to the awareness and science of the reverse logistics field. RLEC defines reverse logistics as “the process of moving goods from their typical final destination to another point, for the purpose of capturing value otherwise unavailable, or for the proper disposal of the products.” They state reverse logistics activities include: processing returned merchandise for reasons such as damage, seasonal, restock, salvage, recall, or excess inventory; recycling packaging materials and reusing containers; reconditioning, remanufacturing and refurbishing products; obsolete equipment disposition; hazardous material programs; asset recovery (RLEC website, Oct 2003). One can see a much more defined list of tasks which encompass many of the activities listed in the other two definitions. A noted significant difference is the action of moving goods to another point which may or may not be its point of origin.

With several definitions one can see reverse logistics can mean many different things to many different people in the corporate world. How companies define their role and scope determine how they adjust their supply chain processes to take advantage or negate the role of reverse logistics in their firm.

How Reverse Logistics Developed

There is no official history of the beginnings of reverse logistics in corporate America, but it began to surface as a legitimate business practice in the late 1980s. Firms were already looking heavily into green logistics which was based more on the responsibilities and environmental concerns of manufacturing such as recycling or waste disposal management. As competition and growth of the US and foreign logistics services flourished, firms were vying for their share of the market. Many organizations came to the realization that the ease of returns and reverse supply chain processes could have a major impact on a customer's decision to buy or purchase goods and services as well as provide unseen profits (Stock and others, 2002).

Most of the literature dedicated to reverse logistics comes from two major schools of thought. Some look at reverse logistics as a process in itself. It is one component dedicated to a specific purpose. Others feel that reverse logistics should be looked at from a holistic point of view as part of the manufacturing cycle or supply chain. It is not the individual process but an integrated part of the cycle of the chain which affects other parts of the chain through its execution and enforcement. There are other theories, but these two are the predominant themes of most literature.

In 1991, Dr. James Stock wrote one of the first known reports on reverse logistics in the United States. Much of it was based on Europe and how they have had to deal with the issues of reverse logistics due to regulatory laws. Many of the case-studies Dr. Stock evaluated looked at European based companies, since they have been in the practice longer. At the center of most European research was the issue of recycling and

environmental concerns (Bearth, 1999). Stock has since followed up his earlier work in the field with new research and continues to be on the leading edge of US exploration on the subject. Many American researchers, including Stock, feel the US is just scratching the surface of the reverse logistics field (Stock, 2001). No one is exactly sure of how big the practice of reverse logistics is, but the next five to ten years will certainly be very dynamic for the field (Bearth, 1999).

Several studies into reverse logistics programs have come up with some interesting initiatives and anecdotes. Dr. Richard Dawe of the Concorde, California based Fritz Institute of Global Logistics identified six symptoms in the return aspect of reverse logistics which cause problems:

1. Returns arriving faster than processing or disposal
2. Large amount of returns inventory held in the warehouse
3. Unidentified or unauthorized returns
4. Lengthy cycle processing times
5. Unknown total cost of the returns process
6. Customers have lost confidence in the repair activity (Schwartz, 2000).

Due to their non-specific nature, these symptoms can be applied to just about any reverse logistics practice. The idea behind Dawe's pitfalls are to apply them to a reverse logistics process to see if any of the symptoms are present. If they are, then further study into why they are present can be addressed. Although these symptoms were designed with the goal of maximizing profit, they can be used generically. Later, in the Results and Analysis section, these six ideas are applied to AMC's program to determine if it has any of Dawe's symptoms.

Another reverse logistics article by Dr. Jim Stock listed the seven deadly sins of reverse logistics. In this piece, Stock compared the seven deadly sins of reverse logistics to the sins in the Divine Comedy by Dante. According to Stock, the seven deadly sins of reverse logistics are:

1. Not recognizing that reverse logistics can be a factor in creating a competitive advantage.
2. Believing that once products are delivered, the firm's responsibilities end.
3. Failure to match internal and external systems and processes in e-commerce and product returns aspect of reverse logistics.
4. Assuming that part-time effort is sufficient to deal with reverse logistics activities.
5. Believing that order cycle times for product returns can be longer and more variable than those for new items being sold or distributed.
6. Assuming that product returns and packaging recycling and reuse will take care of themselves given enough time.
7. Thinking that returns are relatively unimportant in terms of costs, asset valuation, and potential revenues.

The article addresses how each of the seven sins are cumulative and build on each other and that awareness and recognition of the sins is the first step in setting up a reverse logistics strategy (Stock, 2001). Catalogue and internet ordering companies have used these sins to find shortfalls, not only in reverse logistics processes, but customer service and manufacturing processes as well. This, combined with US retailers seeing over \$100 billion per year in returns, are encouraging more business's to look at Stock's seven sins

(Trebilcock, 2002). These seven sins are applied to AMC's reverse logistics program later in the paper.

Stock also co-wrote an article which identified three practices firms need to be aware of when setting up and implementing their own reverse logistic systems. The three fundamentals he points out are:

1. Give returns handling its own turf.
2. Treat returned goods as goods for sale.
3. Design efficient routes for returned products.

The article explains preventing returns from happening can be extremely costly and can have a negative effect on sales. If customers know they have a user friendly return option they are more likely to be inclined to buy (Stock and others, 2002).

The three reports by Dawe and Stock drive home the point of how generalized and open corporate organizations need to be when applying their overall strategy of reverse logistics. The reports are descript in showing the need for a reverse logistics program, but different enough to reinforce that there is no single "holy grail" solution out there. Although no unified program on reverse logistics is currently available, this is not necessarily a bad thing. It is forcing organizations to take a serious look at their practices, both internal and external, to see where they can best concentrate their reverse flow and reparable focus.

REVERSE LOGISTICS DEVELOPMENT IN THE ARMED FORCES

Reverse logistics in the armed forces is not a new idea since most branches of the services have been practicing it in one form or another for the last thirty years. In the last five to ten years though, the concept of a reverse supply chain has emerged. The thought

of this idea, combined with synchronized depot and distribution center forecasting, has sparked much interest throughout the DoD.

The need for a more streamlined logistics process in the armed forces became clearly evident in Operation Desert Shield and Desert Storm. Combatant commanders and their support staffs ordered much needed supplies which were either never seen or were delivered late. Many commanders complained the processes were affecting their combat ability and combat readiness. To compensate for the lack of confidence in the supply system, double and triple orders were submitted in hopes one order might make it to the right place at the right time. Although the outcome of Operation Desert Shield and Desert Storm was favorable, many commanders brought back the frustration of the supply chain and its failures while fighting in the Middle East.

During the buildup for Operations Joint Endeavor, Joint Guard, and eventually Allied Force in the Balkans, many of the same frustrations came to light as supplies and reparables seemed to get lost or misplaced in the supply chain. Commanders initially brought more supplies with them, which helped in the long run but bogged down the initial deployment stage since so much equipment and material was being moved. Again, the outcome was favorable for the United States, but it was evident the true problem of combat military logistics needed some attention at the highest levels.

The United States Army was one of the first to tackle the distribution problem as they researched both successes and failures in their logistics process. The end result was the formulation of the Velocity Management Initiative in 1995. Velocity Management's main objective was to streamline the reliability, responsiveness, efficiency, and performance of the logistics chain from fort to foxhole. It strayed from the Cold War

mentality of hibernated supplies in overseas locations and geared itself more towards the global mindset of a leaner, velocity, and customer focused logistics package. By 1998, the Army felt the fruits of their labor by cutting order, shipping, and repair times by over two thirds throughout the force. Unfortunately, reverse flow was not a fore thought yet (Wang, 2000).

The United States Marine Corps worked closely with the Army in hopes of streamlining their logistics practices as well. The Marines are unique in they like to deploy and operate in force projection packages and need to be self sufficient for extended periods of time. In 1998, the Marine Corps Precision Logistics Office and the Army's Velocity Management Program Office sponsored a study to help redesign the Marine Corps overall logistics methods. The outcome of the study created awareness that a Department of Defense wide total supply chain approach was desperately needed. As a result, the Office of the Undersecretary of Defense, Supply Chain Integration was established to be the DoD office for incorporating a total supply chain process to support war fighters in the armed services (Fricker, 2000). But, even though progress occurred throughout the Marine Corps and DoD, several logistics functions like recycling and reparable were still neglected and not viewed as a way to cut operating costs and provide necessary repair cycles (Walden, 2001).

The focus of streamlining logistics was integrated to all services including DLA who was working several studies with the RAND Arroyo Center, USTRANSCOM, and AMC. Many of the specific studies made great strides for each individual service but not to the military community as a whole. Each armed force was transforming its processes to meet its specific need and, although somewhat similar to other armed forces, many

differences still were apparent. Computer software, internal inventory processes, transportation of supplies, and reverse flow were just a few of the things each service was individually tailoring to meet its war fighting capability needs (Chow, 2003).

In late 1999, USTRANSCOM and DLA began working a blueprint to support each of the armed forces logistics and distribution functions. Although they still wanted individual service logistic functions (Army Velocity Management, Navy High Yield Logistics, Marine Corps Precision Logistics and Air Force Logistics Transformation), the vision was to come up with common practices to be incorporated into each service's process for both peacetime and wartime operations. They formulated a holistic approach to distribution with the hope of reducing the customer wait times experienced during Operation Desert Storm. They also focused on the best way to provide a fort to foxhole total supply chain distribution process to overcome the tedious and cumbersome supply chain experienced in Bosnia and the Middle East. The program evolved into the Strategic Distribution Management Initiative (SDMI, 17 July, 2000).

The Strategic Distribution Management Initiative (SDMI) was officially signed into action on 17 July 2000. Its underlying foundation was to improve customer wait time and time definite delivery. Customer wait time is the "total elapsed time between issuance of a customer order and satisfaction of that order" (SDMI, 2000). Time definite delivery states "95% of the requirements submitted by a customer will be delivered to that customer in the number of days, expressed as customer wait time, established by a customer's requirement priority group and geographical location" (SDMI, 2000). The overarching goal of the initiative was not to fix individual supply problems or individual

transportation problems, but to fix the entire distribution process to include the two key functions of supply and transportation.

In February 2001, USTRANSCOM and DLA released the Program Management Plan (PMP) for the Strategic Distribution Initiative to give guidance on how the program will be managed and the responsibilities associated with its reporting requirements. It provided a roadmap of how to begin the distribution programs and how to achieve the desired end state. The plan introduced the widely used analytical approach to total supply chain integration of DMI. DMI is Define the Process (D), Measure the Process (M), and Improve the Process (I). In the Defining step, current processes and issues are discussed as the process is broken down into its core parts. Measuring is the act of understanding the performance of the process and being able to monitor it for certain performance levels. Improving the process looks at developing new processes or adjusting old processes to meet performance goals and design structures. Both the Army's Velocity Management and the Marine Corps Precision Logistics used variations of the DMI model to identify supply chain and logistics shortcomings, and to identify process improvement areas to exploit and streamline.

DMI focuses on constant monitoring to be effective. It is a continuous loop which must not be broken or failures in the chain can occur. It is both a strategic and tactical tool used in the Strategic Distribution Management Initiative. Its span of control will be incorporated into further refinement of the distribution process for general management of the entire Strategic Distribution vision.

Much of this Program Management Plan (PMP) is a reiteration of the original Strategic Distribution Management Initiative with the exception of section four which

concentrated on roles and responsibilities and how the plan will execute at the executive level. It also outlined resource requirements and deliverables needed for coordination with the Office of the Secretary of Defense (OSD) and the Joint Staffs. It further identifies certain functions which are analyzed by outside agencies like the RAND Corporation and other DoD agencies. Appendix C of the PMP discusses several in-depth reporting procedures and guidelines which seem trivial but distinctly lay out the communication and coordination channels needed to fully meet the requirements of the initiative. Appendix D provides standardized guidance for data processing and data formats and Appendix E lays the framework for all data collection and measurement plans. Performance metrics are essential to the DMI model and are absolutely necessary to understand and diagnose distribution processes. In most cases, time (repair time, cycle time, order fulfillment time) and/or money (cost per pound, cost per mode, cost per mile, dollar value of inventory stockage) will be the primary metrics measured by the distribution initiative. Other metrics such as customer satisfaction, back-order rates, and inventory turbulence are also valuable to see if the initiative is meeting its baseline performance expectations.

Further efforts to refine distribution improvement were released in the Strategic Distribution Program Guidance document dated 31 March 2003. Both Vice Admiral Lippert, Director of DLA, and General Handy, Commander of USTRANSCOM, agreed the transformed distribution process was no longer an initiative within the DoD and it would now be referred to as just Strategic Distribution. After roughly three years, the Strategic Distribution function had grown from a USTRANSCOM and DLA initiative to a USTRANSCOM, DLA, OSD, Joint Staffs, Military Services, Combatant Commands,

and General Service Administration program encompassing almost every facet of mobility operations within the DoD. It had established a solid foundation for all the services with successes in United States European Command, United States Central Command, and United States Pacific Command. Air, sea, and land distribution, synthesized with retrograde equipment and supply movements, were reducing customer wait times while establishing new levels of time definite delivery expectations. It was not without problems and obstacles though, which is why many logistics processes are still being scrutinized heavily by all levels in the execution supply chain.

With this evolution in Strategic Distribution, a new mission statement and vision statement were established to keep pace with the changes and improvements to the overall program. The new vision statement of future Strategic Distribution is “an optimized global system of responsive, reliable, end-to-end distribution service to our customer—during times of peace and war.” The new mission statement also took a more global stance stating, “Transforming the DoD’s global distribution system into an integrated end-to-end distribution process, providing ever improving logistics support to the warfighter, throughout the full spectrum of military operations” (SD Program Guidance, 31 March 2003).

This past July, USTRANSCOM and DLA published the latest version of the Strategic Distribution Management Plan. Even though it was similar to the previous plan of February 2001, it did have some new initiatives which are building the foundation of Strategic Distribution DoD wide. The plan for the first time stresses collaboration of the DoD as the cornerstone for efficient distribution performance. This is not just in the planning and execution modes but also in the administrative mode as well. It is apparent

that Strategic Distribution is definitely a “purple” venture now as many of the old functional stovepipes have fallen and given way to joint logistics practices across the spectrum of the armed services. Although some service processes are still costly and inefficient expenditures, it is clear improved performance measures can work and be attained when collective efforts by all parties use an integrated approach.

The original Strategic Distribution Management Initiative was fourteen pages in length and laid a vision for today’s program management execution. The most recent version is thirty seven pages in length and includes almost an additional twenty pages in appendices. The program is still based on the DMI methodology of continual process improvement and serves as a guide for efficient and critical communication and idea flow.

A spin-off of the Strategic Distribution Program is the Reverse Logistics initiative. USTRANSCOM and DLA understand to have a totally integrated end to end supply chain, the reverse flow must be addressed and exploited. In the USAF, AMC is the primary trunk for air centric reverse flow but is not the only Air Force Command involved in the process. Air Force Material Command (AFMC) has been a leader in performing versions of reverse logistics and retrogrades for the past twenty years. Many logistical practices have been created to coordinate the movement of retrograde parts and equipment for depot level maintenance and repair. In late 2002, a Headquarters AFMC committee met with the goal of developing and integrating a total supply chain approach for the Air Force Retrograde Pipeline. The foundation for the committee was to “reverse the sustainment pipeline, adopting logistics know how, to increase in transit visibility (ITV) and pipeline command and control (C2).” The following is an excerpt taken

directly from the AFMC Logistics division on how the structure of this program will be set up and managed:

- “1. Same data reservoirs and information mining tools – allow several agencies and war fighters to tap into the data and information pools for pertinent information.
2. Same wartime performance standard – every agency and owner in the process chain will be held to the same standard.
3. Same pipeline segments and node owners – all the agencies will be in a partnership for standardization (supply and transportation units, supply chain managers, and wholesale item managers).
4. Same process owners and command and control chain – oversight of all command and control is under the Warfighter Sustainment Division (WSD) for a single point of contact.
5. Same performance motivators and operational incentives – will decrease the chance of neglect or oversight.”

Initial focus of the program included tracking reparable items in support of Operation Iraqi Freedom to both CONUS and OCONUS repair and distribution centers (HQ AFMC/LG Bullet Background Paper, 2002). Implementation of the AFMC reverse logistics program began in October 2003. Initial results found there were not as many reparable carcasses as initially forecasted. According to one AFMC logistician, “This could be for two reasons. First, the amount of carcasses and equipment may not warrant the return. Or, second, there may not be the need for the reparable to come back.” It is implied that a part is being repaired in the field or is not worth the cost to send back if

there is no need to return the carcass (possibly using canned parts from the damaged reparable). In either case, AFMC is closely monitoring their reverse flow plan to see if it is actually needed or can be combined with other logistics programs.

REVERSE LOGISTICS DEVELOPMENT SPECIFIC TO AMC

Just about all the literature on reverse logistics in AMC currently comes from the USTRANSCOM and DLA Strategic Distribution – Reverse Logistics Concept of Operations (CONOPS) – Phase I. This document lays out the framework and foundation for AMC’s initial reverse logistics program in support of the SDMI, the SD-PMP, and the DoD. The initiative is a “concerted effort to realize improved distribution service, in a reverse vector, and in support of our nation’s war fighting forces.” Its initial attempt is to end the stove-piping seen within the logistics community and across the armed forces over the past ten years (SD-RL, Oct 2003).

The initial phase of AMC’s reverse distribution is focused on the overall goal of “underpinning a higher state of operational readiness and a reduction in overall costs through a reverse logistics process. When achieved, America’s war fighting units will be favorably impacted through an enhanced retrograde movement/repair process of repairable carcasses” (SD-RL, Oct 2003).

To foster the achievement of this overarching goal, USTRANSCOM and DLA identified six supporting objectives:

1. Retrograde Movement
2. Service Depot Repair
3. Economic Enhancement
4. Asset Visibility

5. Meet Current Standards
6. Uninterrupted Ability to Transition from Peace to War

(SD-RL, Oct 2003).

Although these objectives will be implemented at some time during the Strategic Distribution Reverse Logistics CONOPS, it is not certain all objectives will be achieved during the initial phase. Also, these six objectives serve as a foundation for the USTRANSCOM and AMC reverse logistics programs and will more than likely be expanded as the program begins to mature and take form.

USTRANSCOM and DLA identify two key components that are crucial to the Reverse Logistics CONOPS. Those components are:

1. Retrograde movement of unserviceable reparable assets to designated Service maintenance depots in the CONUS.
2. Depot repair flow.

(SD-RL, Oct 2003).

For the reverse logistics process to synchronize with the rest of the supply chain, these two components must be integrated. They must not only be understood but also be holistically universal to the entire supply chain synergy (SD-RL, Oct 2003).

Initial implementation boundaries have also been established to provide a defined scope of measurement for the program. The Reverse Logistics CONOPS identify these boundaries as “commencing at the moment reparable carcasses destined for retrograde movement are receipted for the CONUS strategic port of debarkation (POD), and ending at the time when reparable cargo is receipted for by the DLA distribution center unit supporting the maintenance depot” (SD-RL, Oct 2003).

LITERATURE REVIEW CONCLUSIONS

Overall, after reviewing the global literature in both corporate America and the United States Military, the following observations were evident:

1. Although still in its infancy, corporate Europe seems to have a better grasp on how they classify and prescribe reverse logistics and its associated practices. This is mostly due to their forced exposure to the subject by regulation and environmental pressure.
2. With reverse logistics having such a huge scope of activities, it is hard for most agencies to come up with a strategic strategy which will encompass all the processes involved in a reverse logistics program. It is forcing firm's to pick and choose selected activities to concentrate on or outsource to a third party for it to receive the attention it needs.
3. There is a wealth of information on the subject because of its recent importance and emphasis, but much of the literature is vague and not validated. There are several success stories and unrealized failures to examine and it will take more time and research dollars to understand the full impact of this data.
4. The US military literature is very generalized. Since the concept of reverse logistics is just taking form in the military there is not a lot of written literature, let alone specific research. Most of the research is on reparable returns in the Army, Marine Corps and Air Force. With the exception of RAND studies and armed forces student research, most of the military reverse logistic information is word of mouth.

5. With no real unified solution to reverse logistics, it seems many people are pulling in many separate directions and not working together. This is somewhat understandable in corporate America since companies are competing for their share of the market and profit to be made. On the military side, the services need to make sure channels are open for communication on these issues. The Strategic Distribution program is taking steps to do this.
6. In review of the armed services program proposals and studies on reverse logistics, there is never any mention of the cost associated with the process. Discussions of billing, man-hours, and associated costs are blatantly absent. This could be since most of the programs are relatively new and that data may not be available or the total costs associated may not be 100% known.
7. The SD-RL CONOPS have established a foundation for the AMC reverse logistics initiative but AMC has not put out much literature and guidance as to the concept of their tailored program. Possible guidance could be released in the AMC Annual Review or DLA's Year in Review.

Due to the lack of written guidance and seemingly sporadic military reverse logistics practices, there appears to be a distinct need for research on reverse logistics. This paper not only looks specifically at AMC's reverse logistics goals and objectives, but also applies civilian pitfalls to AMC's program. The idea of applying civilian pitfalls is to expose program seams which may have been overlooked when AMC formulated their operating strategy. By researching and studying the AMC program, exposure of military reverse logistics practices will hopefully lead to more awareness of the field throughout the armed forces and DoD.

III. METHODOLOGY

As identified in Chapter I, Introduction, one of the main logistics concerns AMC faces is the reverse supply chain. In the past, AMC has viewed its role of logistics almost exclusively forward. But, when reparable carcasses need to move back to depots, the reverse supply chain never quite seems as effective as the forward flow. The overarching question posed in this study is to determine if the implementation of reverse logistics has met the objectives of AMC. To find a selected methodology which would answer this question, a review of the four supporting investigative questions is appropriate:

1. What are AMC's reverse logistics goals and objectives?
2. Are the goals and objectives of the AMC reverse logistics program being met?
3. In what situations did the AMC reverse logistics processes not meet their intended objectives and why?
4. Identify situations where implementation of the AMC reverse logistics programs could further help AMC meet its program goals and intentions by applying two corporate business pitfall model constructs to it.

DISCUSSION AND SELECTION OF RESEARCH METHOD

When a program is in its infant stage, as AMC reverse logistics is, it is often difficult to evaluate the relationship links between the goals, objectives, and boundaries of the program to their intended performance level. Established programs are easier to evaluate since they have historical data to analyze and study. They also have feedback from various users and interfaces to give assessment as to the success and strength of a program. Areas for improvement can be presented for program development and help it achieve its maximum efficiency. USTRANSCOM, and many other agencies in the DoD,

put out annual reviews which critique their logistics programs and initiatives and give vision for the future shaping of the logistics function. It is a report card not only for the designated agency, but also for the command.

Many research methods, both quantitative and qualitative, were examined to determine if the AMC reverse logistics program is meeting its objectives. But, with somewhat limited resources and the constraint of time, the overarching methodology selected is qualitative in nature. It predominantly involved informational interviews, historical data collection, and application of civilian practices to the military structure.

INFORMATIONAL INTERVIEWS

Informational interviews were conducted to fully understand the concepts and vision of the reverse logistics program at all levels of the DoD. These interviews were structured with a specific focus and question set. The reason for this was two fold: First, it kept the interview on track and asked specific questions applicable to the research question. And second, it kept the variable of time somewhat controlled.

By having a structured interview with a specific question set, the researcher was able to ask targeted questions which pertain to the focus and aim of the research. The interview is more controlled, although open ended, enough to have a free flow of conversation. It also ensured that the same questions were being asked of several different people to see how the answers compared and contrasted. Due to geographic location and time constraints, many of the interviews happened over the phone and via email. Email proved to be a handy enabler for the research process although it took away much of the human contact that can reinforce ideas and vision. It also did not convey any immediate follow up questions or concerns that may have explained or conveyed the true

intent of the researcher or information provider. This could have led to misinterpretation or omission by both parties.

Time was an important issue for this research. All of the people involved in the interview process were inundated with the current world situation of Iraq and Afghanistan plus supporting the normal day to day operations tempo. It was paramount time be kept to an absolute minimum, especially in dealing with senior level leaders at the headquarters level. Having a specific question set and concentration allowed the interview to be direct and to the point thus making sure time was being focused. Again, email proved to be efficient as it could be sent at the convenience to the researcher and answered at the convenience of the information provider.

The persons interviewed during the research and data collection process were selected from a list of personnel who are associated with the reverse logistic program. They fell into three categories: program managers and/or leaders, providers, and customers. Program managers/leaders are personnel who have oversight of the program and can directly influence the vision and implementation of the reverse logistics program in AMC. They implement USTRANSCOM policy and vision and come up with the framework of program implementation within the command. An example of a program manager would be AMC level leadership. Providers are the personnel who physically provide the reverse logistics service. They have the ability to interact with the customer and the program manager/leader to cater reverse logistics service. An example would be a logistics squadron commander, an aerial porter, or a transportation airman. Customers are the personnel who use the service of reverse logistics. In order for the service to exist

there must be a demand from the customer. An example of a customer could be supply personnel or a designated commander (deployed, mission, combatant).

THE INTERVIEW PROCESS

The interview process was conducted in four steps. The first step was to compose the interview questions and determine question relevance. Several iterations of the structured interview were examined to make sure the questions were direct, to the point, and applicable to the research subject. A scripted dialogue was formulated to ensure each information provider understood the research being conducted, how they were participating, confidentiality and parameters of participation, permission to participate, and the structure of the interview (See APPENDIX – 2).

The second step was the request for interview. This entailed contacting specific personnel for their approval and permission to interview them for the research project. An interview notification request letter was developed to explain and schedule interviews (APPENDIX – 1). This letter was sent to information providers, mostly via electronic means, to introduce them to the research and solicit their participation.

The third step in the process was the actual interface of the interview. Face to face contact was the goal but this rarely happened due to budget and time constraints of the researcher. Most of the interviews were conducted over the telephone and via email. An initial time limit of thirty minutes was put on all interviews for structure. Only one interview exceeded the thirty minute time limit with several being much shorter due to interruptions or information provider time constraints.

The fourth and final step was a follow up meeting for any further questions or concerns. It was conducted on average of about a week after the initial interview for the

purpose of follow up questions and refinement of information. Information providers were offered the opportunity to see how their information was being presented and structured and afforded the option to modify or delete information they felt was misunderstood, misquoted, or incorrect. Many of the interviewees had positive feedback on the follow up session since it allowed them to ensure their inputs were being properly documented.

Individuals from several organizations were interviewed and contacted to include:

- USTRANSCOM
- DLA
- HQ AMC
- 21st Expeditionary Mobility Task Force
- 15th Expeditionary Mobility Task Force
- 621st Air Mobility Operations Group
- 305th Logistics Readiness Squadron
- 86th Logistics Readiness Group
- 60th Logistics Readiness Squadron

CONSTRUCTING THE INTERVIEW

To construct an interview which directly answers the investigative questions, an interview protocol was established. This process looked at each of the four main investigative questions and formulated a three to six question set for each. This allowed for purposeful information related to each question to be explored (Creswell, 1998). It also forced the researcher to provide the link of how the four investigative questions tie into the overarching research question. To construct the research interview, three different question areas seemed to fit the interview question set well. These three question areas focused on the first three investigative questions.

Investigative Question #1

What are AMC's reverse logistics goals and objectives?

Three questions were constructed for the first phase of the interview. The intent of these questions was to discuss what the overarching goal of the program is and what the feasibility is for AMC to perform this function. It also explored the relevance of the program for the command. By showing a relevance of objectives and goals, a link is established to what the goals are and the overarching research question of if AMC is meeting these goals.

Investigative Question #2

Are the goals and objectives of the AMC reverse logistics program being met?

Six questions were constructed for the second phase of the interview. These questions were devised to show relationships between the six supporting objectives of the AMC program and how the interviewee perceives the program. It was intended to pool expert opinion from the leadership, management, and operators of reverse logistics. This question set was meant to expose gaps to what AMC is proposing it should do versus what it is actually doing. It was also intended to identify any strengths or weakness of the program. This qualitative information justifies a direct link to the overarching question of AMC's goal and the people who lead and support the program.

Investigative Question #3

In what situations did the AMC reverse logistics processes not meet their intended objectives and why?

Four questions were constructed for the third phase of the interview. The idea behind these questions was to show situations where the reverse logistics process did not work and why. Specifically, they look at internal factors such as culture for the program, integration of the program and effect of the program. This information can be used to give reasoning to all levels of the program for weaknesses and failures of the system. The problems are used to show relationships of how the overarching goal of the program is meeting or falling short of its intentions.

Investigative Question #4

Identify situations where the implementation of the AMC reverse logistics programs could further help AMC meet its program goals and intentions by applying two corporate business pitfall model constructs to it.

The idea to not “formally” introduce this question in the interview process was done on purpose. The intent was to concentrate the interviewee on AMC’s program and use that information to see if any specific trends form. Based on the interviewee’s responses, main ideas could then be applied to the civilian pitfall models. These pitfall models give the researcher a chance to show a link between civilian problems and military problems and provide possible solution sets to overcome these problems.

CONDUCTING THE INTERVIEW

The reason for the interview methodology was to gain first-hand information directly from the people who are working the program, dealing with the day to day issues, shaping the CONOPS, providing the service, and receiving the service of the program. As mentioned before, the interviews consisted of three sections (See APPENDIX – 2). When face to face or telephone contact was not available, a

questionnaire was forwarded to gather information. This questionnaire was identical to the canned questions of the interview (See APPENDIX – 3).

The methodology used for data assessment of the interviews and questionnaires is mostly categorical aggregation. Categorical aggregation allows for the collection of data hoping issue relevant meanings will emerge (Stake, 1995). It also looks for established patterns and correspondence between categories or levels of the program (Creswell, 1998). From analyzing the data, a generalization can then be made by applying it to the bounded population of the study (Creswell, 1998). To consolidate the interview and questionnaire data, an EXCEL spreadsheet was established to organize each of the four levels of command. Each level was broken into three major categories: role, perceived outcome, and constraints. Based on the structure of the interview, the proposed methodology, and the overarching research question, these three categories seemed to fit the research design the best. They also can be directly linked to the investigative questions since they are the combined results of the interview questions. These results can then be compared to the CONOPS for the program to see if the implementation of a reverse logistics program has met the objectives of AMC.

HISTORICAL DATA COLLECTION

Historical data collection was obtained by several methods. Much of the data was obtained via email, telephone, and written correspondence from directorates and individuals at:

- USTRANSCOM
- DLA
- HQ AMC
- RAND Corporation
- Air Force Institute of Technology (AFIT)
- 21st Expeditionary Mobility Task Force

- 15th Expeditionary Mobility Task Force

A multitude of briefings, bullet background papers, talking papers, draft CONOPS, distribution management initiatives, and meeting minutes provided much of the background information used as a framework for reference. The raw data was put into EXCEL spreadsheets for organization and interpretation. The internet also provided valuable information for both the civilian and military reverse logistics evolution and execution. The Defense Technical Information Center (DTIC) website, the Air University (AU) website and AFIT website had many sources available as well as the Air Mobility Warfare Center's (AMWC) General Ronald R. Fogleman Library and the USTRANSCOM Library Research Center.

The AMC Advanced Study of Air Mobility (ASAM) Program provided several face to face interactions with subject matter experts who were able to lend perspectives on historical data and evolution. ASAM course curriculum studied at Scott Air Force Base, McGuire Air Force Base, Fort Dix, and Wright-Patterson Air Force Base aided in the gathering of data and information relating to the subject matter.

Much of the data collected by this means was used to establish a background of the program and how it has evolved. Already much of this information has been introduced in Chapter II, Literature Review.

APPLICATION OF CIVILIAN PRACTICES

In the Literature Review, two articles were cited as recognizing strengths or weaknesses in the reverse logistics field. Each of these practices were applied to AMC's program based on their dynamic ability to be used on any reverse logistics process. They were chosen to identify shortcomings of the AMC program and to see if these

shortcomings directly affected the investigative or overarching research question results. The first was an article written by Dr. Richard Dawe who identified six symptoms which cause problems in a reverse logistics program or management initiative. The six symptoms are:

1. Returns arriving faster than processing or disposal
2. Large amount of returns inventory held in the warehouse
3. Unidentified or unauthorized returns
4. Lengthy cycle processing times
5. Unknown total cost of the returns process
6. Customers have lost confidence in the repair activity

This research applied the six symptoms of Dr. Dawe's article to AMC's reverse logistics program to see if it had any of the symptoms. These results were then compared to how AMC viewed itself and if it felt it was conforming to the reverse logistics initiative.

A similar article written by Dr. James Stock listed the seven deadly sins of a reverse logistics program. The seven deadly sins identified by Dr. Stock are:

1. Not recognizing reverse logistics can be a factor in creating a competitive advantage.
2. Believing once products are delivered, the firm's responsibilities end.
3. Failure to match internal and external systems and processes in e-commerce and product returns aspect of reverse logistics.
4. Assuming part-time effort is sufficient to deal with reverse logistics activities.
5. Believing order cycle times for product returns can be longer and more variable than those for new items being sold or distributed.

6. Assuming product returns and packaging recycling and reuse will take care of themselves given enough time.
7. Thinking returns are relatively unimportant in terms of costs, asset valuation, and potential revenues.

This section used the same methodology in Dr. Dawe's study to compare Dr. Stock's model to AMC. Again, the reason these two models were chosen for study is they are easily understood, they are inclusive in nature, they are easily applied, and they can quickly identify major shortcomings of a program. Once a shortcoming is exposed, it gives the firm an area on which it can concentrate to make the process more effective and advantageous. The results of the AMC application are recorded and discussed in the next chapter, Results and Analysis.

CONSTRAINTS AND BIASES WHICH LIMITED THE RESEARCH

For this research study, five factors were identified which could have had a direct or indirect bias or constraint on the data and results. These five factors include time, geographic location, available assets, researcher knowledge level, and participant availability.

Time is identified as a constraint in conducting the research, gathering the data, and formulating the results. By operating under strict timelines imposed by AFIT and the Mobility Operations School staff, data gathered may have been rushed or not as complete. These time constraints often led to conflicts with scheduling interviews and availability of research participants for face to face interaction. Every attempt was made to validate all data gathered.

Geographic location was another noticeable constraint. By not having the availability to regularly visit on site research locations, data had to be gathered and interpreted using alternate methods such as email, telephone, and written correspondence. Although this did not prohibit the research it did cause a constraint in not having a direct access to the information resources.

Available assets were a third constraint of the research. Limitations in budget for field travel allowed only limited access to all available research areas and locations. Having the budget to travel could have allowed more extensive research in the actual locations where the processes were being done.

A fourth factor which may have caused bias in the research was researcher knowledge level in a qualitative study. By having a limited background in the subject, possible comprehension errors in data analysis were possible. Everything extracted during the research was gathered through reading and interviewing. With not a lot of information geared towards the military and DoD, much of the reading came from limited past research, USTRANSCOM initiative plans, and USTRANSCOM CONOPS. When interviewing, a standardized question set was used and every effort was made to record answers in the context in which they were meant. This is important when conducting qualitative research since perspectives and thoughts are meant to be open ended and not dictated to the interviewee by the interviewer (Patton, 1990).

Participant availability was also a constraint. Not all senior leaders and personnel contacted for interviewing and questioning could participate. Many individuals did go out of their way to make the time but some declined participation and others never

responded. Those who declined participation unanimously noted time as the primary reason. In a perfect scenario this would not be the case.

IV. ANALYSIS AND DISCUSSION

In this section, Analysis and Discussion, several areas of the research topic are covered. These areas include a review of the data from the study, a comparison of AMC's program to two civilian models for analysis, an analysis of the importance of the research to the field of reverse logistics, and a discussion of the results posed by the investigative research questions. The data and results presented represent the views and scope of several levels of leadership and execution in the reverse logistics program. They are the people and groups which define, measure, shape, command, control, and implement the reverse logistics program throughout the DoD.

REVIEW OF THE RESEARCH DATA

There are four perspectives or levels of reverse logistics that were explored to gather data. Those four levels are the overall command and implementation level at USTRANSCOM and DLA, the command and implementation level at AMC, the command and implementation level at 15th and 21st Expeditionary Mobility Task Force (EMTF), and the command and implementation level at selected base squadrons associated with the reverse logistics process.

USTRANSCOM and DLA Level

This section discusses the perspective of USTRANSCOM and DLA on how AMC is meeting its reverse logistics objectives and goals. Time constraints, physical geographic separation and conflicting schedules made interviewing USTRANSCOM and DLA personnel extremely challenging so a questionnaire was used in place of the interview process where appropriate. This questionnaire was sent electronically and the data presented is a combination of the responses received.

USTRANSCOM is the oversight for reverse logistics program in AMC. They provide the vision and framework for which AMC will conduct and execute its designated program. They are the single point of contact within the supply chain dedicated to reverse logistics throughout the DoD. USTRANSCOM sets the expectations of the program and gives the armed services within the DoD the tools to ensure they can execute the program towards its intended end-state. They also reconcile and coordinate the goals and objectives of the program, develop planning models, publish CONOPS and program direction, analyze the impact of processes on reverse logistics, and look for long term customer service initiatives and improvements.

At the USTRANSCOM and DLA level, three roles were perceived to be the dominant expectations for AMC's program:

1. To find a feasible and synchronized reverse logistics system to fit within the daily constraints of transportation within AMC.
2. To ensure the depot or repair schedules for reverse logistics reparable could be incorporated into already near full forecasted repair cycles.
3. To reduce and minimize costs for all agencies involved with AMC's reverse logistics program. NOTE: Cost was not always associated with dollar amounts and was explained in terms of time, delivery schedules, and frequency or consistency for repair cycles.

In order for this to happen, AMC has to commit adequate resources and manpower to this project. A USTRANSCOM official stated, "The purpose of the reverse logistics program is to streamline the total supply chain process, not to encumber it. This can only be done by breaking down the current retrograde cycles and fully incorporating them into an

aggregate and synchronized flow which will reduce unknown variability and provide warfighters in the field and at home the state of readiness they must have. No expectation is too high when we talk about our logistics chain since it can make or break our warfighting capability.” Commitment from the top level down is apparent and, although there will be some growing pains involved with initial stand-up, senior level leaders will expect AMC to work to make the program as seamless an integration as possible.

The overall goals of the initial CONOPS put out by USTRANSCOM were meant to be a starting point for all the services involved with reverse logistics. USTRANSCOM and DLA personnel agreed the program is not a “turn the key” and let it run type of plan, and small initiatives by AMC will form the foundation of the program on which to build. Incorporating the best of what other armed services have started and are currently using can also be a guide. Although USTRANSCOM is the overall owner of the reverse logistics program, USTRANSCOM and DLA personnel both stressed AMC must serve as the focal point for both CONUS and OCONUS cargo. As the major executing branch for overseas reparables, AMC will also play the largest part in the validation of the air component of the program.

Strengths and weaknesses of AMC’s program were not specifically addressed since several USTRANSCOM personnel wanted more time to see the initial data reports. USTRANSCOM personnel agreed although there is a push to get the program up and running, an accurate assessment of strengths and weaknesses will probably not be known for some time. Practices within the construct of the program which prove to be

showstoppers will have immediate need for address but in-depth, accurate analysis of the process will take some time.

One blatant omission identified by USTRANSCOM was the absence of the United States Army in the initial phase of the reverse logistics program. With AMC being the primary air component of the initiative, it was understood the United States Army would carry the burden of most of the surface centric reverse flow. Funding, network flow routes, and truck load capacity were some of the issues and problems still being worked concerning the involvement of the Army. No one could give a definitive answer for the void other than to say future phases of the initiative will include the Army. One of the overarching goals of the Strategic Distribution program is a total combined and integrated supply chain across the spectrum of the DoD and its supporting agencies. “There is no question the start up of the reverse logistics initiative is hurt by the absence of the United States Army” said one USTRANSCOM official. A few questionnaire respondents also added the development of conflict in the Middle East drew attention and resources away from the program in favor of deficiencies in the field. Regardless, the integration of the Army is essential to program success.

AMC Level

This section discusses the perspective of AMC on how they are meeting their reverse logistics objectives and goals. Once again, time constraints, physical geographic separation, and conflicting schedules made interviewing Air Mobility Command personnel extremely challenging so a questionnaire was sometimes used in place of the interview process. When interviews were possible they were conducted over the

telephone. Questionnaires were sent electronically and the data presented is a composite of all the responses received through interview and questionnaire.

As the principle component of the air centric cargo retrograde branch, AMC is tasked with putting together a program which will not only meet the needs of USTRANSCOM but, more importantly, provide a service customers from the armed services will use for retrograde movement. To provide this worldwide capability, AMC has had to design a framework in which to integrate this function of movement while still sustaining its day to day demands.

AMC personnel identified six primary roles of the reverse logistics initiative at their level. The six roles are:

1. The movement of cargo flowing back from overseas locations and / or United States locations to maintenance depots for repair and regeneration.
2. To synchronize retrograde cargo centric networks (both air and land) to maintenance depot repair cycle schedules for minimum wait times at the depot.
3. Provide a system of visibility to all users for the effective and efficient tracking of assets whether it be land, air, or sea based. This level of visibility should be easily tied into by all services and components of the process.
4. To decrease the amount of time it takes to move cargo through aerial ports.
5. Ensure reverse logistics movement requirements are forecasted and known to increase the efficiency of scheduling and reduce wasted carrying capacity.
6. Use the Transportation Capital Working Fund for cost minimization across the program.

Unquestionably the main concern from AMC was lack of cargo carrying capacity. Even with the push from senior leaders for more C-17s, there is still concern over what is enough lift to effectively carry out the distribution mission which includes the reverse flow.

Two other major stumbling blocks were identified which are affecting the implementation of the program. Those stumbling blocks are information technology systems software and funding. They are not separate problems since they both rely on each other to make the appropriate transactions in funding occur. One AMC Logistics official explained “The main idea was to have the Transportation Capital Working Fund (TWCF) pay for scheduled truck service at a reasonable rate over a scheduled route with the intent to provide reliable service from both OCONUS and CONUS bases to Airlift Logistics Centers (ALC). The overall concept was to have McGuire Air Force Base, New Jersey as the primary Aerial Port of Embarkation (APOE) for all retrograde carcasses from Europe. A truck would start at McGuire and continue to Dover, Charleston, Langley, Pope, and Seymour Johnson picking up the carcasses at each station. Unfortunately, with two separate pipelines (CONUS-ALC and OCONUS-ALC) shipments can not be commingled on one truck due to information technology detachment.”

To understand how the detachment occurs, a review of the process is appropriate. When a reverse distribution shipment originates in the CONUS for commercial surface movement, it requires a Commercial Bill of Lading (CBL) or Government Bill of Lading (GBL) to legally cross state lines. The software system a Traffic Management Office (TMO) uses to create the CBL or GBL is the Cargo Movement and Operating System

(CMOS). To pay for the commercial surface transportation, a software information system called Power Track is used. When a GBL or CBL is generated, CMOS sends the bill to Power Track and immediate payment for transportation is given to the appropriate commercial agency. This replaces the old paper shuffle system where a commercial carrier would bill the Defense Finance Accounting Services (DFAS) and be paid months later. With the establishment of the reverse logistics program, AMC did not want to use the Power Track system. Instead, they wanted to use TWCF funds for payment. An AMC staff member went on to explain “To pay for surface transportation truck services, CMOS processed shipments still generate a charge to the United States Government (USG) through the Power Track system. Initially, we thought we had a work around by having DFAS establish a ‘dummy account’ in USG’s name within Power Track. By doing this, we could have TWCF pay for the truck service, TMOs would do their surface cargo process without any artificial workarounds, and USG would get their money back as an ‘agent’ within Power Track. Unfortunately, DFAS and the AMC Financial Manager concluded this kind of dealing is not practical or acceptable.”

In this situation, AMC is left with two major problems on how to commingle OCONUS and CONUS shipments on to one truck. The first problem is creating a way to process Global Air Transportation Execution System (GATES) and CMOS information regarding surface transportation to ensure workarounds are not the norm. The second is the problem of double paying for a single shipment if both GATES and CMOS are used to process a single transportation request.

15th and 21st Expeditionary Mobility Task Force Level

This section discusses the perspective of Expeditionary Mobility Task Force on how they are implementing their resources to meet the goals and objectives of AMC's reverse logistics program. Time constraints and conflicting schedules made interviewing many personnel extremely challenging so a questionnaire was sometimes used in place of the interview process. When interviews were possible they were conducted over the telephone and in person. Questionnaires were sent electronically and the data presented is a composite of all the responses received through interview and questionnaire.

In October 2003, the reorganization of AMC took away the traditional Numbered Air Forces (NAF) and replaced them with an EMTF. When this reorganization happened several of the NAF staff positions also were either dissolved or restructured to other staff functions. By doing this, the EMTF does not play a direct part in the reverse logistics program but do have an indirect role with their subordinate Air Mobility Operations Groups (AMOG).

There are two deployable CONUS AMOGs at Travis AFB, California and McGuire AFB, New Jersey. The mission of the AMOG is to rapidly establish, expand, sustain, and document Global Air Mobility Operations for the United States of America (AMC/AMOG Brief, 2004). The AMOG personnel interviewed and questioned identified two roles for their part in the reverse logistics process.

1. Process the retrograde cargo as needed through the aerial port.
2. Ensure priority retrograde cargo is identified upon initial receipt and handled through the port to synchronize with its follow on transportation to the depot or next destination.

To do this the AMOG provides the two critical functions of command and control and in-transit visibility to the AMC reverse logistics function. The command and control system is robust and centers on the aerial port function of the AMOG. It can work on many different levels depending on the requirement and priority of the cargo. Confusing lines of communication and control can cause cargo to become frustrated or lost in the system. The AMOG works to define those confusing lines and provide a seamless transition for the cargo across theaters and commands. The in-transit visibility is also done through aerial port operations. It uses the radio frequency identification (RFID) tags for tracking and identification of cargo through the port. It also uses the GATES system for in-transit location. The consensus of several AMOG members is GATES is not the problem system in the logistics process; it is the operators who are the problem. Improper training and lack of user knowledge were identified as current issues.

Squadron Level

This section captures the lowest command level perspective of the AMC reverse logistics program. It will look at the squadron level view of reverse logistics and how they are benefiting from the intended goals and objectives of AMC. Time constraints, physical geographic location, and conflicting schedules made face to face interviewing challenging so often a questionnaire was used in place of the interview process. When interviews were possible they were conducted over the telephone. Questionnaires were sent electronically and the data presented is a composite of all the responses received through the interviews and questionnaires.

The squadrons, mainly logistics readiness squadrons (LRS), identified three major roles they play in the reverse logistics process.

1. Identify and locate accountable, reparable assets for the purpose of possible regeneration or recycling.
2. Ensure the proper documentation is accompanying the retrograde carcass or equipment.
3. Monitor the status of each piece of reparable equipment for supply needs forecasted inventory stocks.

Most people interviewed felt they were the focal customer in the reverse flow process.

They were the initiator as well as the final customer. Surprisingly, several LRS personnel said they were aware of the program but did not know much about it.

The LRS squadrons are often the direct logistics link to the wing and combatant commanders. They provide almost all the logistical support to these folks in both peace and contingency operations. One LRS member felt “Often the war fighting commander does not have a good understanding of his or her supply chain in forward progression let alone in reverse. I’m not sure commanders are ready to tackle the reverse cycle since many have operated so long without it.” Other LRS personnel questioned expressed similar views. One person went on to add “Reverse logistics exploits a part of the supply chain commanders never knew they had, so why expect commanders to use it if they do not know it is available. Sometimes even we need to remind ourselves there are easier and more efficient ways of using our resources.”

COMPARISON OF AMC’s PROGRAM TO TWO CIVILIAN MODELS FOR ANALYSIS

In this section, two civilian perspectives from the literature are applied to AMC’s program to see how it stacks up against each. The two perspectives are from Dr. Richard

Dawe (six symptoms of reverse logistics that cause problems) and Dr James Stock (the seven deadly sins of reverse logistics).

Dawe's Model Analysis

Dawe identified six common problems in implementing and executing a reverse logistics program in the civilian sector. Although these problems were formulated with a civilian perspective they do apply to AMC and their program.

1. *Returns arriving faster than processing or disposal* – AMC is trying to synchronize depot delivery to work within scheduled maintenance cycles. This will alleviate the log jam of reparable which are sent to the depot only to sit for several days or weeks. Lining up the delivery cycles is forcing AMC to look at the most efficient way to move the cargo. Carcasses being retired are also considered in this category since often parts can be cannibalized before final disposal.
2. *Large amount of returns inventory held in the warehouse* – This ties in with synchronizing return cycles so large stockpiles do not occur. Volume forecasts are currently being evaluated to ensure no unintended inventory occurs. This problem is looked at in three places (APOD, APOE and depot yards) to safeguard against this problem.
3. *Unidentified or unauthorized returns* – Forecasting models and expected tempo volumes are considered by AMC when scheduling returned carcasses although no system is full proof. There will always be unidentified items in the flow but AMC is working to minimize this type of problem through the use of in-transit visibility and RFID. Unauthorized returns are at the

discretion of the receiving depot. If they can not fix it and do not want the part back for scrap, then they will inform the sending unit or command to take appropriate action.

4. *Lengthy cycle processing times* – Although sometimes unavoidable, AMC is scheduling processing times for returnables based on transportation availability and the depot repair schedule. Each reparable will have different cycle times and matching those times up with priority maintenance will provide a consistent repair cycle. By ensuring a level of consistency, all members of the distribution chain can accurately plan equipment levels and return cycle rotations.
5. *Unknown total cost of the returns process* – This part of the AMC program is still somewhat unknown since the initiative is still getting started. The RAND Business Case Analysis (BCA) figured initial costs based on forecasted volumes of reparables but until AMC gets the program working on a consistent rhythm, this factor will be highly variable. Using the TWCF concept for funding should ensure AMC breaks close to even as far as expenses.
6. *Customers have lost confidence in the repair activity* – This is a crucial variable for AMC. Customers from all services in the DoD will not use AMC's system unless it can do what is advertised. Many customers have gone to World Wide Express (WWX) or Federal Express (FEDEX) since they can do it for cheap and the service is reliable. If AMC can prove to have the

same degree of success as WWX or FEDEX, they should begin to bring in a share of returnable products.

Stock's Model Analysis

Stock described the seven deadly sins an organization must watch for when executing its reverse logistics program. Much like Dawe, these perspectives were researched in the civilian sector and are being applied to AMC's program to see if any shortfalls are evident.

1. *Not Recognizing Reverse Logistics Can Be A Factor In Creating A Competitive Advantage* – Even though the Air Force and AMC are not in a competitive environment when it comes to integrating a new business practice, maximizing efficiency is a concern. This is the main reason AMC is taking the USTRANSCOM initiative and incorporating it as a “normal” practice. By using the reverse flow of the supply chain, AMC is hoping to stabilize its regeneration of aircraft, equipment, and other transportation nodes to get the maximum use of its resources.
2. *Believing Once Products Are Delivered, The Firm's Responsibilities End* – AMC leadership at all levels understand forward delivery is only half the process. In any contingency, humanitarian relief effort or peacekeeping mission, not only do the troops and equipment have to get to the location, they have to leave as well. Very rarely do transportation assets go to the forward location and stay. They will normally forward deploy and then return. This is where AMC is looking to maximize its opportunities by placing retrograde reparables and other applicable equipment and cargo on the deposition leg.

This reverse supply chain approach also allows commanders in the field to bring in and take out reparable as necessary versus bringing everything they have to the fight.

3. *Failure to Match Internal and External Systems and Processes in E-Commerce and Product Returns Aspect of Reverse Logistics* – This is the major showstopper for AMC right now with the CMOS and GATES systems. Until corrective software interoperability or a new information technology system is brought in, the funding and trucking paperwork is always going to be a workaround approach versus a direct approach.
4. *Assuming A Part-Time Effort Is Sufficient To Deal With Reverse Logistics Activities* – This is a common trait in any new process or program. If AMC does not put the appropriate manpower and resources towards this effort it will fail. It also sends the message to the people who run the program upper leadership is not committed to it. Even though this may not be the case it is the perception personnel involved will see. Funding projects in the Air Force is a tricky venture and AMC, like the rest of the Air Force, has to justify every dollar it budgets for. Throwing money and resource haphazardly at this program will not only create a climate for failure but will also put a strain on other parts of the supply chain which need and support the retrograde effort. Just like any distribution cycle, full time end to end management is necessary to ensure the process accomplishes the desired output.
5. *Believing Order Cycle Times for Product Returns Can Be Longer and More Variable Than Those for New Items Being Sold or Distributed* – With the

transformation of the DoD distribution process, the variability of reparable assets should be minimal. Unfortunately, until AMC can show consistent customer wait times and time definite delivery statistics, users will still fall back to this opinion. For commanders in the field, the method and process of getting their troops and equipment to or home from the fight is irrelevant. All they want is to have their stuff waiting for them when they arrive. Saying reverse logistics can do this is one thing but being able to produce it will be the true test of the reverse logistics process and the measure by which the program will be validated.

6. *Assuming Product Returns and Packaging Recycling and Reuse Will Take Care of Themselves Given Enough Time* – This attitude is the direct result of ownership. Unless there is a known point of contact or process owner, the responsibility of retrograde equipment will always be someone else's problem. By USTRANSCOM being named the single point of distribution for all the DoD, measures are in place to ensure this problem has ownership at the highest level. It will now be AMC's challenge to follow suit by having distinct process owners at the major command (MAJCOM) level who not only serve as process owners but also as facilitators between functional components to reduce seams in the process. Only with accountability and process ownership at all levels will this attitude be overcome and exploited.
7. *Thinking Returns Are Relatively Unimportant in Terms of Costs, Asset Valuation, and Potential Revenues* – Reverse logistics has proven in the corporate world to not only enhance and streamline the supply chain but also

provide sizeable revenue. By exploiting the reverse flow, organizations realize money can be made on both sides. AMC may not be too concerned with trying to make a profit in terms of dollars but they are interested in making a profit with recycled/repaired equipment to the warfighter. When logisticians look at readiness they know the warfighter needs the supply chain for beans, bullets and equipment. The logistician's job is to provide the warfighter with a supply chain which will get them the needed supplies to sustain a level of readiness to meet mission objectives. This state of readiness may not be a direct cost or revenue by definition but if it is unable to sustain certain levels of performance, mission readiness will be degraded.

For the most part, AMC has avoided the pitfalls of Dawe's and Stock's models. Issues like synchronizing depot schedules to cycle times, understanding the potential of retrograde assets, and having primary process owners are understood by AMC reverse logistics planners and fall in line with the USTRANSCOM initiative. But, there are some valid concerns to highlight which could be argued. Two of these areas for concern are the internal processes for funding with the incompatibility of the GATES and CMOS information technology systems and the allocation of resources to the reverse logistics program. The incompatibility issue is currently on the scope of the AMC and USTRANSCOM staff. The resource allocation plan is somewhat hazier though. Without participation of the US Army, the funding problems with software, and the lack of getting the program initially off the ground, the perception is the reverse logistics program may not be high on the AMC A4 staff agenda at this point in time.

IMPORTANCE OF THE DATA AND RESULTS TO THE FIELD OF REVERSE LOGISTICS

The information and results aggregated for this research project have specific relevance to the field of AMC reverse logistics. Some of the identified areas of importance are:

1. *Create awareness of the reverse logistics process.* In the DoD we rely on logistics to provide us with a specific warfighting capability tailored to the situation or conflict. By creating awareness of the reverse distribution process, commanders will be equipped with another tool to enhance their warfighting capability and increase readiness in the field.
2. *Highlight strengths of AMC's reverse logistics program.* Highlighting the strengths of a program will lead to awareness and possible future resource allocation. By showing the strengths and capability of the process, the DoD will ensure the program is continued and expanded for future development.
3. *Expose the weaknesses and seams of the program.* Exposing weaknesses also helps in the resource allocation process. Money and resources needed to correct weaknesses can be lobbied for to further enhance the capability of the process. It is also important to expose seams in the process to show where trouble areas are and open them up to correction.
4. *Provide an outsider perspective of AMC's reverse logistics program.* By having limited prior experience in the field of study, the perspectives brought to the research were initially unbiased and fresh. Having to learn the logistics process and understand the transformation of AMC and USTRANSCOM with

the Strategic Distribution Management Initiative, both constructive and disruptive ideas were highlighted. This, coupled with tying the supply chain to different levels of command and control, provided a different and sometimes conflicting research perspective.

5. *Link the theory of reverse logistics to reality.* By collecting the data and presenting the information and analysis of the research, AMC should have a snapshot view of how their process is running. Using available resources, AMC can look to further develop avenues to pursue and refine for the initial stages of implementation. These lessons learned can be shared with the other services to also help in the continuous improvement of their systems as well.

INVESTIGATIVE QUESTIONS POSED BY THE RESEARCH

The goal of this research attempted to answer the following investigative questions concerning AMC and their reverse logistics program:

1. What are the AMC reverse logistics goals and objectives?
2. Are the goals and objectives of the AMC reverse logistics program being met in their global reverse logistics program?
3. In what situations did the AMC reverse logistics processes not meet their intended objectives and why?
4. Identify situations where implementation of the AMC reverse logistics programs could further help AMC meet its program goals and intentions by applying a two corporate business constructs to it.

In regards to the first question, there is no formal written guidance published. AMC officials feel they are a supporting function of the USTRANSCOM initiative and

therefore their goals mirror USTRANSCOM's. Since all policy and strategic oversight of the program is owned by USTRANSCOM, AMC thinks it would not be constructive to the program, at this point in time, to establish their own goals and objectives.

For the second research question, the answer is no. Due to the funding/payment issues discussed earlier in this chapter and the information technology challenges involved, the program, at almost all levels, is at a standstill. Until improvements and solutions to these two issues can be resolved the program will remain on the blackboard.

Question three ties in closely with question two. The AMC reverse logistics process has not met its objectives for several reasons. Internally, the funding and software issues have halted the program. Externally, non-inclusion of other armed services into the initial strategy, has not given the program the correct environment in which it is supposed to function. The whole idea of the SDMI and the transformation movement of the logistics world is to operate under one standardized and common supply chain which will allow joint logistics movement in both peace and war. AMC's program, while supporting certain Air Force assets, has not expanded its scope to incorporate the entire DoD. Since the program is currently working through the funding and software challenges, not much attention has been given to future expansion and DoD wide integration. One other reason for the delay in getting the initiative going is the current operation going on in the Middle East. With resources committed to this theater the reverse logistics program has been hindered. Until things stabilize for AMC in this region, the reverse logistics program may not receive the attention it needs from all levels which are involved in its execution.

And finally, in question four, by applying the civilian constructs to AMC program three noticeable areas for concern were revealed. The obvious one was the funding and software issue and the other two were the unidentified/unauthorized returns and the lost customer confidence. In this case, once the program is up and running awareness will be the big education challenge. If AMC and USTRANSCOM can create awareness and produce a reliable program then it is assumed customers would use it. But, with the program having problems right now, those customers who are aware are skeptical of the programs reliability at best.

SUMMARY

The qualitative study of the AMC reverse logistics process is difficult to assess since the program has limited written guidance and AMC is facing issues right now which are hindering its progress. By reviewing and analyzing the data, weaknesses of the program have been identified for future process refinement. The hope is the weaknesses will be addressed by AMC and reengineered so the reverse logistics program can meet the goals and objectives of USTRANSCOM and the entire DoD.

V. CONCLUSIONS

This section addresses the overarching research question posed by the study, provide a summary of research conclusions, provide recommendations for the AMC reverse logistics program, and recommend future research considerations in this field of study.

OVERARCHING RESEARCH QUESTION

The overarching research question of this study was to see if the implementation of reverse logistics has met the objectives of AMC. Unfortunately, the answer is no. With the funding and software problems currently encountered, not only has the program not met AMC's objectives, it is yet to reach a state of implementation. AMC is actively looking at ways to overcome the current problems it has encountered, but right now there are no near term solutions.

The basis of this conclusion was provided by the information gathered to answer the four investigative questions. In addition, AMC did not specifically avoid all of Dawe's symptoms and avoid all of Stock's seven deadly sins, and is clearly not meeting the six objectives of the CONOPS put out by USTRANSCOM.

SUMMARY OF RESEARCH CONCLUSIONS

The main reason the implementation of reverse logistics has not met the objectives of AMC is the gap between what the USTRANSCOM CONOPS call for and what AMC is actually doing. Chapter IV, Analysis and Discussion address how subject matter experts viewed their roles, outcomes, and constraints. Although these areas do coincide with the six supporting objectives of the AMC program, the actual act of implementation has not happened. The strategy has been set, but the execution is still yet

to begin. This is due to four reasons. First, the vision of the CONOPS was to eventually integrate all the armed forces into the program. No one interviewed could give a reason as to why this integration did not start from the inception of the program. An argument can be made by taking small steps and building upon those, but eventually the program will need to expand so why not start it out the way it was intended to be used. The second reason is CONUS and OCONUS cargo does not commingle for the intended reverse movement. This means these cargo loads need to travel separately. This is not only a possible waste of capacity, but also a waste of transportation assets to carry two loads which could potentially be commingled into one. The third reason execution has not been implemented is the software systems being used. The AMC program is trying to use the GATES and CMOS systems to do functions they were not originally intended to be used for. Because of this, double billing and billing workarounds are the norm. And finally, awareness of the reverse logistics program seems to be lacking at the lower levels of the supply chain. This is not uncommon since many workers at the squadron level do not have, or are privy to, the big overall picture.

In the Air Force we have strong paradigms and are somewhat reluctant to change. We are often constrained by budgets and equipment as well. But, without modification or a simple reengineering effort in these four areas, the AMC reverse logistics program will never run as efficiently as it could.

The two civilian models used for comparison of AMC's program also echo the aforementioned thoughts. Overall, AMC is not fully addressing all of Dawe's and Stock's concerns. It does not appear AMC needs to totally overhaul any of their processes, but monitoring internal and external influences on the program are needed.

Until the program is running on a consistent basis, data will be somewhat clouded and invalid.

AMC should be concerned with the delayed implementation of their reverse logistics program since potential customers are using alternative methods of retrograde logistics to ensure they get the needed support they want. This concern is not an overnight fix but will be crucial to future peacetime and wartime operations. Without an effective reverse supply chain, the whole logistics process and function would be degraded which may not allow support for the battle rhythm needed to maintain tempo.

RECOMMENDATIONS FOR THE AMC REVERSE LOGISTICS PROGRAM

This research has come up with issues for AMC to look at in implementing and executing its reverse logistics program. The issues recommend seven distinct areas which must be functioning for the program to work and have a positive effect on the reverse supply chain. These areas are identified as imperative identification areas (IIA). IIAs are areas that won't cause a total failure in the system but can cause substantial delays or flow stoppage which can eventually affect readiness. Seven of these IIAs identified in the research were process owner responsibility, coordination across the spectrum of reverse logistics, consistency of the functional areas, task efficiency, result oriented effect processes, output direct outcome, and seams identification and filling. Each of the areas is discussed in detail below.

- 1. Process Owner Responsibility* – During the research study, there was never an identifiable point of contact who would take responsibility for ownership of the program. That is not to say the sources that provided information were not competent and accessible. It is imperative to have one or two accessible and

competent points of contact for this program. It is the only way the day to day coordination can be kept up with and problems resolved for leadership, reverse logistic producers and customers of the process. This program can not be a tertiary activity or additional duty for the command. If it is treated like such it will end up as such. It is a program that will continue to expand under USTRANSCOM's Strategic Distribution Program and appropriating the correct resources during the initial phases of the program will not only identify immediate shortfalls but also create a structure for future implementation. It is somewhat of a "pay me now or pay me later" type of venture. Past experiences show many personnel are eager to own a process and take great pride in making their piece of the chain as efficient as it can be. Giving them a stake in the game and showing them how their actions can either enhance or disrupt the system often will have a positive result. By delaying or denying the program proper ownership responsibilities and resource allocation, it will never reach its potential efficiency and be more of a problem area than a help in the supply chain.

RECOMMENDATION: Once the program is ready to be implemented, have an identifiable point of contact(s) for the program.

2. *Coordination Across the Spectrum of Reverse Logistics* – As with most business practices there are many parts associated with the overall process of a reverse logistics program. Duties from transportation carriers, to aerial port workers, to resource allocation depot managers will all touch the process at some point in time. Therefore, it is important to start out educating everyone on how the coordination of the program works to all players who touch or are affected by

the reverse logistics program. Based on the information gathered during the study, it appears as if the education process has occurred at the headquarters levels but not at the squadron levels. It does not really matter if every logistician has a direct or indirect affect on the process, they have to be educated and indoctrinated with how their actions will ripple the total process. Coordination could possibly be the key enabler to the success of the program. All command and subordinate levels having contact with the program must understand their process owner responsibilities and know how coordination across the entire retrograde system works. Another key factor here is the coordination and integration of all the armed services. It can not be stressed enough how important it is to start with a scope to incorporate all these agencies from the beginning so problems like funding, software and communication channels can be addressed early.

RECOMMENDATION: Develop awareness and training briefings which can be used by unit training monitors.

RECOMMENDATION: Make provisions to incorporate all the services in the process to establish the full intention of the program.

3. *Consistencies of the Functional Areas* – One variable which can alleviate frustration and coordination problems is consistent and reliable functional components. With many program areas comprising the reverse logistics chain, having predictable transportation depot and delivery schedules will take the unknown variability out of the process and allow for more efficient program management for day to day operations. Although this type of practice is a

cornerstone of the AMC program, there was no evidence found during the study to suggest this network has been set up to sustain the reverse logistics program. Having inconsistent schedules leads to crises management by all players and reduces the efficiency and production of the plan.

RECOMMENDATION: Ensure consistent networks are in place to support a determined reliability rate for reverse logistic delivery schedules. Use this reliability rate as a metric for program measurement and improvement.

4. *Task Efficiency* – Reverse logistics is a process comprised of several individual tasks. These tasks are not stand alone and build on each other as reparable move throughout the reverse flow. Isolation of a specific task without looking at the entire process will hinder the process. What may be good for the specific task or the specific task manager may not be good for the reverse supply chain as a whole. This falls under the concept of total supply chain management and how seams in the supply chain must be smoothed by process owners for the chain to effectively work. This type of education and understanding can be introduced during training. Task efficiency is important to understand and will help each task manager and overall process owner understand all that goes into coordination of the retrograde equipment and parts. Understanding roles beyond the scope of the task is a key hurdle in keeping the supply chain efficient which in turn will keep the supply chain flowing and on schedule.

RECOMMENDATION: Develop awareness training briefings which can be used by unit training monitors.

5. *Result Oriented Effect Processes* – Ensuring processes in the reverse flow are based on results rather than activities or tasks falls in line with streamlining for efficiency. By producing the required or desired result of the program (readiness, combat capability, decreased time schedules, in transit visibility, schedule synchronization, customer wait times, etc...) the resulting effect should be favorable. The CONOPS of the reverse logistics program does address results but does not specifically address how to achieve these results. Orienting the tasks of the process towards the desired result and effect is the key to this principle. This is much easier said than done. The effect to the customer, the effect to the process providers, and the effect to the leadership must all fall in line to arrive at the result or desired state. Any inconsistency in this chain will obscure the full potential of the effect.

RECOMMENDATION: In future versions of the CONOPS, address specific metrics by which the program can be measured against.

6. *Output Directs Outcome* – This ties closely into result oriented effect processes. The output of the result will create the outcome of the effect (Hammer, 2001). If the output of the flow is slow and hindered, the outcome to the customer could be decreased readiness, missed opportunity by lacking parts or equipment, or delays in maintenance and repair schedules. It is important to note that not all outputs considered favorable for one task organization will produce the desired outcome for other tasks in the process. This is why it is of consequence to emphasize mutual understanding across the spectrum of reverse logistics to ensure the effect is focused by all parties involved.

RECOMMENDATION: In future versions of the CONOPS, address specific metric outcomes by which the outcomes can be measured against.

7. *Seams in the Process Must Be Filled* – All programs dealing with distribution and logistics chains have seams. Some of those seams are very apparent boundaries from one process task to the next. Other seams are hidden within the tasks that form boundaries internal to that part of the process. The most noticeable seams are between organizations where transfer of the retrograde cargo and equipment will occur. But, internal to those same organizations, seams in paperwork, process ownership, and task execution can also result in lost efficiency. During this study, internal seams of software and funding were keeping the implementation of program from happening. External seams of network depot cycles and the omission of the other armed services were noted as absent. Regardless, program providers and leadership must try to overlap the seams of reverse logistics for smooth retrograde transition.

RECOMMENDATION: Look at ways to correct the software/funding issues to eliminate workaround strategies.

RECOMMENDATION: Make provisions to incorporate all the services in the process to establish the full intention of the program.

It becomes readily apparent each of these IIAs is linked to all the other areas in the overall program supply chain (See Figure 1). Understanding the inherent boundaries of the process and how everyone fits in is a tough process to fully comprehend. You will never have a perfect system in the field but by knowing the whole concept of the program

and how each functional area touches it, efficiency and high performance levels are definitely attainable and should be expected.

FUTURE RESEARCH CONSIDERATIONS

With the information presented, there are several avenues for future study concerning AMC reverse logistics. There is no question future research needs to be focused on taking the initial program and looking for improvements in performance and integration of the total process. It is an immature program which could be built to fulfill the vision of USTRANSCOM, if given the priority. Some of the areas recommended for future research are:

1. *Outsourcing* – Outsourcing, which is a growing trade in the civilian sector, is one possible option for AMC. With WWX, FEDEX and other contractors out there, the option to outsource the transportation piece can have an effect on how the program runs and is implemented. Specifically looking at cost and the benefits and drawbacks of each company would have importance. Also looking at how outsourcing is used and manipulated in the civilian sector could lead to possible options.
2. *Integration of all services* – The CONOPS for the program do address this issue stating as the program evolves so will the inclusion of other services. Analysis does need to be addressed on how this integration will occur and what the roadmap to this end state looks like. This program currently can not support this type of venture with its current structure.
3. *Statistical analysis of metrics* – How the program is going to be measured and to what degree success in measured is a need of the program. Measurements in the areas

of time and cost are a given but finding ways to see success and failures in readiness and customer satisfaction are desperately needed for program validity.

4. *Incorporation of 18th Air Force* – With the reorganization of AMC, 18th Air Force will now answer directly to the AMC staff and be the sole NAF of AMC. By the evolution of its structure, 18th Air Forces roles and responsibilities need to be addressed and solidified for seamless transition and execution.

CONCLUSION

Reverse logistics is a USTRANSCOM priority. It is a program senior leadership has deemed viable in the transformation of the logistics processes across the DoD. AMC is taking steps to get the program up and running but it is evident more development is needed for the program to meet the intended objectives.

Several options are available for AMC in the expansion of the reverse logistics process but they do come with a price of allocating personnel and resources. Although there is no single holy grail solution, some options are definitely better than others. AMC must continue to pursue their vision for this program to ensure it not only does what USTRANSCOM and the rest of the DoD want, but also emphasize the strengths of AMC airlift and its other transportation and logistics processes.

Time and constant improvement will be the criteria which will determine the success of the program. As the building blocks form, AMC will have the opportunity to make this program valuable where it counts...to the warfighter across the spectrum of peace and war.

IIAs TO AMC REVERSE LOGISTICS

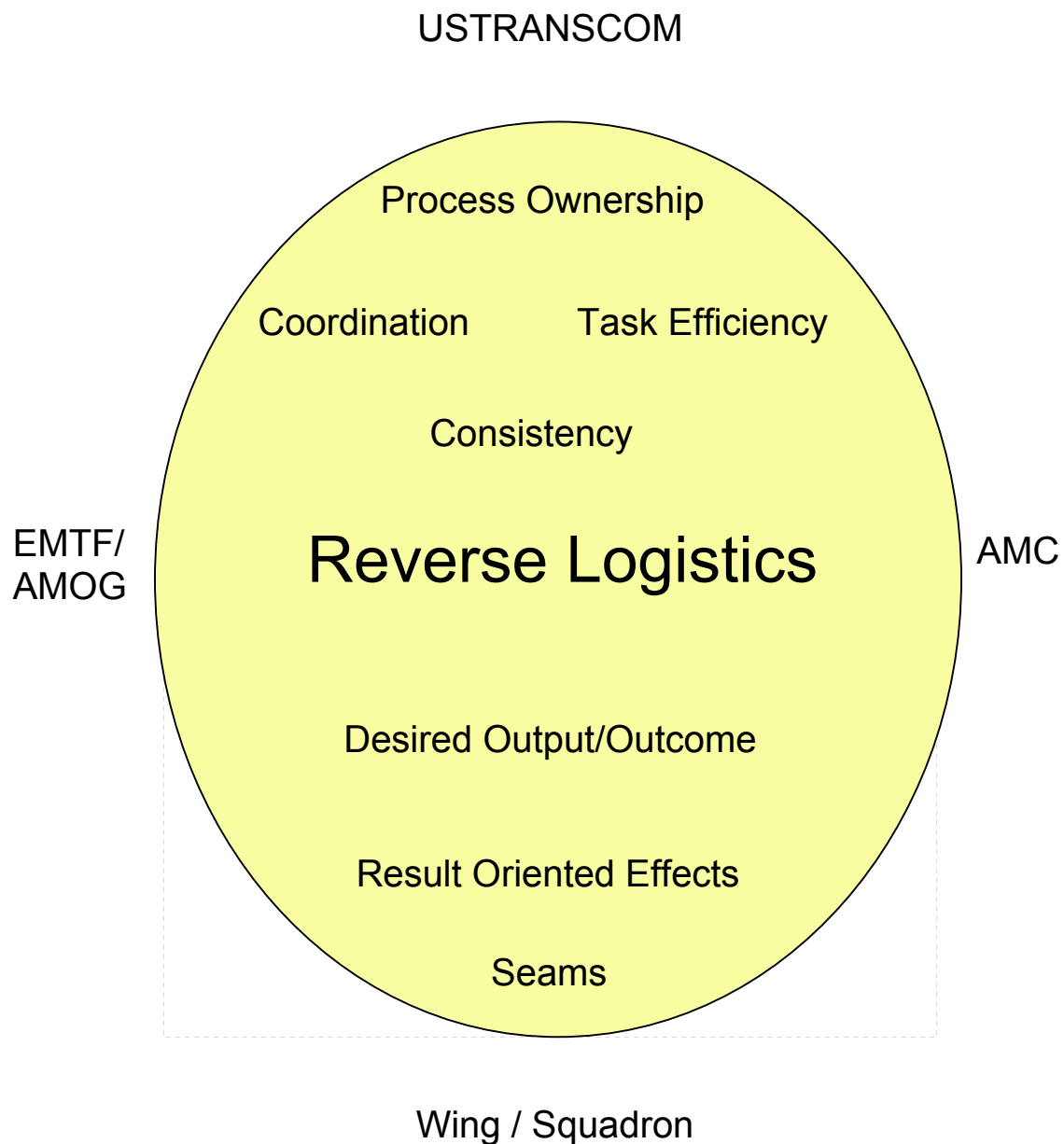


Figure 1 Imperative Identification Areas – AMC Reverse Logistics Initiative

APPENDIX – 1: EXAMPLE OF NOTIFICATION LETTER

Letter head

Date

I am a student in the Advanced Study of Air Mobility (ASAM) program at the Air Mobility Warfare Center (AMWC), Fort Dix, New Jersey. As the culmination of our curriculum, we are required to write and present a graduate research paper (GRP) on a topic of interest to AMC. The focus of my research concerns Air Mobility Command and its reverse logistics program. The goal of the research is to determine if AMC is meeting its reverse logistics objectives. The object of this questionnaire is to gather data, opinions, vision, views, and any other information related to AMC reverse logistics and to determine any possible strengths or weaknesses the program to provide AMC with possible solutions for future expansion or evolution.

Participation in this research is strictly voluntary. You have been identified as a participant who plays an active role as a leader, provider, or customer in AMC's reverse logistics program. Your feedback and vision of the process will help guide the research being conducted to see if AMC is meeting its intended objective. This is non-attribution participation and if you choose not to participate, it will in no way be held against you by the researcher or conveyed to others that you refused.

The goal of the questionnaire is to accurately portray the state of the AMC reverse logistics program. The findings and views expressed in the research paper will not specifically name you as a participant in the research. I will take everything you answer into confidentiality and no one else will be privy to any information to identify you as the information provider. If the information you give is to be quoted, every effort will be made to protect your identity. I will offer you as a participant to see my final paper to ensure you have not been identified or misquoted to protect the integrity of this process.

The questionnaire will consist of three separate sections. The entire questionnaire takes about thirty minutes to complete. The first section question set pertains directly to what the actual goals and objectives of the program are and how or what AMC is doing to meet those goals. The second section deals with how you, the information provider, play a role in the program. The third section addresses questions of organizational culture of reverse logistics in the AMC supply chain and suggested improvements. Thank you for the consideration and time.

Sincerely,

JEFFREY W. DEVORE, Major, USAF
Student, Advanced Study of Air Mobility, Class 04
Air Mobility Warfare Center

APPENDIX – 2: INTERVIEW STRUCTURE

OBJECTIVE: This interview was designed for a graduate research project for the Advanced Study of Air Mobility (ASAM) Class 04. Its focus concerns Air Mobility Command (AMC) and its reverse logistics program. The goal of the research is to determine if AMC is meeting its reverse logistics objectives. Several methodologies are being used to determine this to include the interview process, historical data interpretation, and application of civilian practices. The object of this interview is to gather data, opinions, vision, views, and any other information related to AMC reverse logistics and its practices. The goal is to determine any possible strengths or weaknesses the program and provide AMC with possible solutions for future expansion or evolution.

INTRODUCTION: I am Major Jeffrey DeVore and will be conducting the interview to gather information related to USTRANSCOM's reverse logistics program and how AMC is currently employing it. The goal of my research is to see if AMC is meeting its own reverse logistics objectives and identify any strengths or weaknesses of the program.

PARTICIPATION: Participation in this research is strictly voluntary. You have been identified as a participant who plays an active role as a leader, provider, or customer in AMC's reverse logistics program. Your feedback and vision of the process will help guide the research being conducted to see if AMC is meeting its intended objective. This is non-attribution participation and if you choose not to participate, it will in no way be held against you by the researcher or conveyed to others that you refused.

SECURITY INFORMATION: The goal of the interview is to accurately portray the state of the AMC reverse logistics program. I will be writing down your views, ideas, and thoughts and will make sure I have correctly quoted your responses in order to gain the correct perspective. The findings and views expressed in the research paper will not specifically name you as a participant in the research. I will take everything you say into confidentiality and no one else will be privy to any information to identify you as the information provider. If the information you give is to be quoted, every effort will be made to protect your identity. I will offer you as a participant to see my final paper to ensure you have not been identified or misquoted to protect the integrity of this process.

STRUCTURE OF THE INTERVIEW: Due to time constraints every effort will be made to conduct the interview in thirty minutes or less. This is not to rush things but keep the interview flowing in the interest of time. The interview will consist of three separate sections. The first section question set pertains directly to what the actual goals and objectives of the program are and how or what AMC is doing to meet those goals (from the interviewees perspective). This will help in determining validation of the program. The second section deals with how you, the interviewee, play a role in the program. Strengths of your particular role, your organizations role, and weaknesses are a focus area for this section. The third section addresses questions of organizational culture

APPENDIX – 2

(Continued)

of reverse logistics in the AMC supply chain and suggested improvements. It also addresses questions about the role of reverse logistics in readiness and combat capability and if the AMC initiative was having any effect from your standpoint.

QUESTION SECTION 1:

The overarching goal of the USTRANSCOM Reverse Logistics Program is “underpinning a higher state of operational readiness and a reduction in overall costs through improved performances reverse logistics process. When achieved, America’s war fighting units will be favorably impacted through an enhanced retrograde movement/repair process of repairable carcasses.”

Q1: Do you think AMC as a whole is traveling along these lines to meet this overarching goal?

Q2: Do you think reverse logistics is even relevant in AMC?

Q3: Is this a realistic goal for AMC to pursue?

QUESTION SECTION 2:

To support the overarching goal of the program, USTRANSCOM has identified six supporting objectives. The six objectives include retrograde movement, service depot repair, economic enhancement, asset visibility, meeting current standards, and uninterrupted ability to transition from peace to war.

Q4: From your perspective, how do you fit into any of these supporting objectives?

Q5: Has your exposure to these objectives been in congruence with what AMC is trying to achieve?

Q6: These objectives are broad in nature, has that been a help or a hindrance when conducting and executing reverse logistics processes?

Q7: Have you identified any strengths in supporting the reverse logistics initiative in your practices or your organizations?

Q8: How about any weaknesses?

APPENDIX – 2
(Continued)

Q9: Given the framework of the program, is AMC/your organization postured to succeed in this area or do further refinements and changes need to be made for integration and success?

QUESTION SECTION 3:

Q10: How has your organization or leadership presented and provided the appropriate culture for this initiative to take shape?

Q11: Has reverse logistics seamlessly integrated itself into your organizations supply chain processes?

Q12: Are there any specific examples of how reverse logistics has affected readiness or combat capability in your organization, in your group, in your wing, in the field, etc...as appropriate.

Q13: Do you think AMC reverse logistics is making a difference or having an effect on the way we conduct business or is it proving to be a waste of time, effort, and resources?

APPENDIX – 3: QUESTIONNAIRE STRUCTURE

OBJECTIVE: This questionnaire was designed for a graduate research project for the Advanced Study of Air Mobility (ASAM) Class 04. Its focus concerns Air Mobility Command (AMC) and its reverse logistics program. The goal of the research is to determine if AMC is meeting its reverse logistics objectives. Several methodologies are being used to determine this to include the interview process, historical data interpretation, and application of civilian practices. The object of this questionnaire is to gather data, opinions, vision, views, and any other information related to AMC reverse logistics and its practices. The goal is to determine any possible strengths or weaknesses the program and provide AMC with possible solutions for future expansion or evolution.

INTRODUCTION: I am Major Jeffrey DeVore and will be distributing and analyzing the questionnaire to gather information related to USTRANSCOM's reverse logistics program and how AMC is currently employing it. The goal of my research is to see if AMC is meeting its own reverse logistics objectives and identify any strengths or weaknesses of the program.

PARTICIPATION: Participation in this research is strictly voluntary. You have been identified as a participant who plays an active role as a leader, provider, or customer in AMC's reverse logistics program. Your feedback and vision of the process will help guide the research being conducted to see if AMC is meeting its intended objective. This is non-attribution participation and if you choose not to participate, it will in no way be held against you by the researcher or conveyed to others that you refused.

SECURITY INFORMATION: The goal of the questionnaire is to accurately portray the state of the AMC reverse logistics program. The findings and views expressed in the research paper will not specifically name you as a participant in the research. I will take everything you answer into confidentiality and no one else will be privy to any information to identify you as the information provider. If the information you give is to be quoted, every effort will be made to protect your identity. I will offer you as a participant to see my final paper to ensure you have not been identified or misquoted to protect the integrity of this process.

STRUCTURE OF THE QUESTIONNAIRE: The questionnaire will consist of three separate sections. The first section question set pertains directly to what the actual goals and objectives of the program are and how or what AMC is doing to meet those goals (from the information providers perspective). This will help in determining validation of the program. The second section deals with how you, the information provider, play a role in the program. Strengths of your particular role, your organizations role, and weaknesses are a focus area for this section. The third section addresses questions of organizational culture of reverse logistics in the AMC supply chain and suggested

APPENDIX - 3

(Continued)

improvements. It also addresses questions about the role of reverse logistics in readiness and combat capability and if the AMC initiative was having any effect from your standpoint.

QUESTION SECTION 1:

The overarching goal of the USTRANSCOM Reverse Logistics Program is “underpinning a higher state of operational readiness and a reduction in overall costs through improved performances reverse logistics process. When achieved, America’s war fighting units will be favorably impacted through an enhanced retrograde movement/repair process of repairable carcasses.”

Q1: Do you think AMC as a whole is traveling along these lines to meet this overarching goal?

Q2: Do you think reverse logistics is even relevant in AMC?

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Q4: From your perspective, how do you fit into any of these supporting objectives?

Q5: Has your exposure to these objectives been in congruence with what AMC is trying to achieve?

Q6: These objectives are broad in nature, has that been a help or a hindrance when conducting and executing reverse logistics processes?

Q7: Have you identified any strengths in supporting the reverse logistics initiative in your practices or your organizations?

Q8: How about any weaknesses?

Q9: Given the framework of the program, is AMC/your organization postured to succeed in this area or do further refinements and changes need to be made for integration and success?

APPENDIX - 3
(Continued)

QUESTION SECTION 3:

Q10: How has your organization or leadership presented and provided the appropriate culture for this initiative to take shape?

Q11: Has reverse logistics seamlessly integrated itself into your organizations supply chain processes?

Q12: Are there any specific examples of how reverse logistics has affected readiness or combat capability in your organization, in your group, in your wing, in the field, etc...as appropriate.

Q13: Do you think AMC reverse logistics is making a difference or having an effect on the way we conduct business or is it proving to be a waste of time, effort, and resources?

ACRONYMS

AFIT	Air Force Institute of Technology
AFMC	Air Force Material Command
ALC	Airlift Logistics Center
AMC	Air Mobility Command
AMOG	Air Mobility Operations Group
AMWC	Air Mobility Warfare Center
APOD	Aerial Port of Debarkation
APOE	Aerial Port of Embarkation
ASAM	Advanced Study of Air Mobility
AU	Air University
BCA	Business Case Analysis
C2	Command and Control
CBL	Commercial Bill of Lading
CLM	Council of Logistics Management
CMOS	Cargo Movement Operating System
CONOPS	Concept of Operations
CONUS	Continental United States
DFAS	Defense Financial Accounting Office
DLA	Defense Logistics Agency
DMI	Define, Measure, Improve
DoD	Department of Defense
DTIC	Defense Technical Information Center
EMTF	Expeditionary Mobility Task Force
FEDEX	Federal Express
GAO	General Accounting Office
GATES	Global Air Transportation Execution System
GBL	Government Bill of Lading
GDP	Gross Domestic Product
IIA	Imperative Identification Area
ITV	In Transit Visibility
LRS	Logistics Readiness Squadron
MAJCOM	Major Command
NAF	Numbered Air Force
OCONUS	Overseas
OSD	Office of the Secretary of Defense
POD	Point of Debarkation
RFID	Radio Frequency Identification
RLEC	Reverse Logistics Executive Council
SD	Strategic Distribution
SDMI	Strategic Distribution Management Initiative
SD-PMP	Strategic Distribution Program Management Plan
TMO	Traffic Management Office
TWCF	Transportation Capital Working Fund
USAF	United States Air Force

USG
USTRANSCOM
WSD
WWX

United States Government
United States Transportation Command
Warfighter Sustainment Division
World Wide Express

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Vita

Major Jeffrey “Pep” DeVore received his Bachelor of Science degree in Airway Science Management from Kent State University, Kent, Ohio and was commissioned as a Second Lieutenant in the United States Air Force in December 1991.

He completed the Basic Computer/Communications Officer Training course at Keesler AFB, Mississippi in 1993 as was assigned as the Deputy Chief of Plans and Programs, 305th Communications Squadron, Grissom AFB, Indiana. His selection to Undergraduate Navigator Training at Randolph AFB, Texas came in late 1993. Upon his completion of navigator training he was assigned as a C-130H navigator to the 40th Airlift Squadron at Dyess AFB, Texas. While stationed at Dyess AFB, Major DeVore served in a variety of jobs to include tactics, assistant flight commander, and evaluator navigator. In 1999 Major DeVore was reassigned to Ramstein AB, Germany and held such positions as squadron and group evaluator, deputy chief of wing plans, navigator flight commander, and chief executive officer to the 86th Operations Group Commander. In May 2003 he was assigned to the Air Mobility Warfare Center, Fort Dix, New Jersey as a Student for the Advanced Study of Air Mobility Program.

Major DeVore was promoted to his current rank 1 November 2002. He received a masters degree in human resources from Abilene Christian University in 1997, completed Air Command and Staff College by correspondence in 2003, and completed Marine Corps Command and Staff College by correspondence in 2004. Upon completion of Intermediate Service School, his next assignment will be to Headquarters Air Force, National Guard Bureau, the Pentagon, Virginia.

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13. SUPPLEMENTARY NOTES					
14. ABSTRACT <p>The concept of reverse logistics is an important part of any supply chain in which the military participates. Air Mobility Command (AMC) plays an integral role in this process by providing transportation assets for support. This research paper represents an in-depth look at the AMC reverse logistics process to see if its implementation is meeting its intended objectives. Specifically, it focuses on what the goals and objectives of AMC's reverse logistics program are, and in what situations they fell short of their intentions. It also addresses improvement areas by applying two civilian models to the program.</p> <p>The researched areas revealed the AMC reverse logistics process has not met its objectives for several reasons. Internally, funding and software issues have halted the program. Externally, the non-inclusion of other armed services into the initial strategy has not given the program the correct environment in which it is supposed to function. The whole idea of the Strategic Distribution Management Initiative and the transformation movement of the logistics world is to operate under one standardized and common supply chain which will allow joint logistics movement in both peace and war. AMC's program, while supporting certain Air Force assets, has not expanded its scope to incorporate the entire DoD.</p> <p>The AMC reverse logistics program has limited written guidance and AMC is facing issues right now which are hindering its progress. By reviewing and analyzing the data, weaknesses of the program have been identified for future process refinement.</p>					
15. SUBJECT TERMS Reverse logistics in Air Mobility Command					
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a. REPORT U	b. ABSTRACT U	c. THIS PAGE U			19b. TELEPHONE NUMBER (include area code) (937) 255-6565 Ext 4335